

RAMEY KEMP ASSOCIATES

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T 804 217 8560

4343 Cox Road
Glen Allen, VA 23060

June 30, 2021

Mr. Christian Samples, AICP
 City of Manassas
 9027 Center Street
 Manassas, Virginia 20110
 Phone: (703) 257-8200

Reference: **Wawa – Digges Road – Revised Traffic Impact Analysis (TIA)**
 Manassas, Virginia

Dear Mr. Samples,

Ramey Kemp & Associates, Inc. (RKA) has performed a Traffic Impact Analysis (TIA) for the proposed 6,049 square foot (s.f.) / convenience store with 16 fueling positions (f.p.) which will replace the three small existing commercial buildings located in the south quadrant of the Route 234 Business (Sudley Road) at Digges Road intersection.

The proposed access plan includes closing the existing full-movement driveway on Digges Road, maintaining the right-in / right-out on Sudley Road and closing one of the two existing full-movement driveways on Champion Court. If approved, the proposed store is expected to be built in 2023. Figure 1 shows the site location and study intersections, and Figure 2 shows the preliminary site plan.

The purpose of this letter report is to provide the following:

- Trip generation calculations
- Evaluation of turn lane warrants for the study intersections
- Capacity and queueing analysis of the study intersections

Existing Roadway Conditions

Sudley Road (Route 234 Business) is a four-lane divided Minor Arterial with an average daily traffic (ADT) volume of approximately 28,000 vehicles per day (vpd), and a posted speed limit of 35 miles per hour (mph) in the vicinity of the site.

Stonewall Road is a two-lane Major Collector with an ADT volume of approximately 4,300 vpd and a posted speed limit of 25 mph.

Digges Road is a local roadway with an ADT volume of approximately 1,600 vpd and a posted speed limit of 25 mph.

Figure 3 shows the existing lane configuration.



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Existing Traffic Volumes

The AM peak hour (7:00 to 9:00 AM) and PM peak hour (4:00 to 6:00 PM) turning movement counts were conducted by Peggy Malone & Associates, Inc. at the following intersections during week of October 22, 2018:

- Sudley Road at Digges Road
- Sudley Road at Stonewall Road

The counts were increased by an annual rate of 1.0% for three years to estimate the existing 2021 volumes. The traffic count data are enclosed, and the existing 2021 volumes are shown in Figure 4.

Background 2023 Traffic Growth

Based on historical ADT's and discussion with the City, the 2021 peak hour traffic volumes were grown by an annual rate of 1.0% for two years to estimate the no-build 2023 peak hour traffic volumes which are shown in Figure 5.

Trip Generation

The trip generation potential of the proposed gas station during a typical weekday, AM peak hour, and PM peak hour was estimated using the methodologies published by the Institute of Transportation Engineers (ITE) *Trip Generation Manual – 10th Edition*. Table 1 summarizes the trip generation calculations.

Table 1
ITE Trip Generation – Weekday – 10th Edition

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Super Convenience Market / Gas Station (960)	16 f.p.	1,844	1,844	224	225	183	184
ITE Pass-by Trips: 63% AM / 66% PM		-1,189	-1,189	-141	-141	-121	-121
New Primary Trips		655	655	83	84	62	63

Note that ITE provides rates for super convenience markets / gas stations based on vehicle fueling positions and store square footage. Based on discussion with the City, the vehicle fueling positions is the basis of calculations in this TIA.

Site Trip Distribution

The following primary site trip distribution was applied based on the TIA scope meeting with the City, a review of the existing traffic volumes, the adjacent roadway network, and engineering judgement:

- 47.5% to / from the east on Sudley Road
- 47.5% to / from the west on Sudley Road
- 5% to / from the south on Stonewall Road

It was assumed that all pass-by trips will originate from Sudley Road with the following directional distributions:

- AM Peak – 45% eastbound / 55% westbound
- PM Peak – 50% eastbound / 50% westbound

Figure 6 shows the primary site trip distribution and Figure 7 shows the pass-by site trip distribution. Figure 8 shows the primary assignment and Figure 9 shows the pass-by assignment. Figure 10 shows the total site trips and Figure 11 shows the projected 2023 build-out peak hour traffic volumes.

VDOT Turn Lane Warrant Analysis

The build AM and PM peak hour traffic volumes were compared to the turn lane warrants in the Virginia Department of Transportation (VDOT) *Access Management Design Standards for Entrances and Intersections*.

Sudley Road at Right-in / Right-out Site Driveway:

- An eastbound right-turn lane is warranted

Figure 12 shows the recommended roadway laneage.

Access Management (Intersection Spacing Standards)

VDOT requires at least 250 feet of separation between traffic signals and partial access driveways on Minor Arterial roadways posted 35 mph. The proposed right-in / right out driveway on Sudley Road is approximately 275 feet east of the Sudley Road at Digges Road intersection, which exceeds VDOT's minimum spacing standards.

VDOT requires at least 200 feet of separation between intersections and full-access driveways on local roadways posted 25 mph. The proposed full-access driveway on Champion Court is approximately 120 feet east of Digges Road. A DCSM waiver is attached for review.

Traffic Capacity Analysis

Traffic capacity analysis for the study intersections was performed using Synchro 10, which is a comprehensive software package that allows the user to model signalized and unsignalized intersections to determine levels-of-

service based on the thresholds specified in the Highway Capacity Manual (HCM) 6th Edition. All signalized delays are based on HCM 2000 methodology. All queues were reported using the maximum SimTraffic queues based on the average of 10 microsimulation runs.

Table 2 summarizes the capacity analysis results for the signalized intersection of Sudley Road at Digges Road, and the Synchro and SimTraffic outputs are enclosed for reference.

Table 2
Level-of-Service Summary for Sudley Road at Digges Road

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)
Existing (2021) Traffic Conditions	EBL	E	75.4	74	C (21.5 sec)	E	71.4	182	C (23.7 sec)
	EBT	B	16.7	318		B	19.5	446	
	EBR	B	13.0	35		B	12.5	21	
	WBL	F	105.5	192		F	103.7	186	
	WBT	A	4.1	198		B	12.2	420	
	WBR	A	1.2	44		A	3.3	75	
	NBL/T	E	68.1	44		E	70.9	123	
	NBR	E	67.4	50		E	63.4	77	
	SBL/T	E	72.1	175		E	72.6	171	
	SBR	E	63.0	86		E	62.0	89	
No-Build (2023) Traffic Conditions	EBL	E	75.4	82	C (21.6 sec)	E	71.9	180	C (23.9 sec)
	EBT	B	17.1	315		C	20.0	558	
	EBR	B	13.2	35		B	12.7	20	
	WBL	F	104.7	177		F	103.1	182	
	WBT	A	4.2	194		B	12.2	418	
	WBR	A	1.1	46		A	3.1	67	
	NBL/T	E	68.1	55		E	70.9	123	
	NBR	E	67.4	48		E	63.3	75	
	SBL/T	E	72.1	179		E	72.4	182	
	SBR	E	62.8	68		E	61.8	56	
Build (2023) Traffic Conditions	EBL	E	75.1	92	C (32.1 sec)	E	72.3	199	C (33.4 sec)
	EBT	C	29.5	464		C	33.0	731	
	EBR	C	22.5	56		C	20.4	318	
	WBL	E	69.8	251		F	83.9	234	
	WBT/R	A	8.1	175		B	14.2	268	
	NBL/T	E	74.1	130		E	76.6	142	
	NBR	E	59.2	68		E	56.6	60	
	SBL/T	E	72.1	169		E	72.4	184	
	SBR	E	62.8	73		E	61.8	72	

Capacity analysis indicates that the intersection currently operates at LOS C during the AM and PM peak hours. Under no-build conditions, the intersection is expected to continue to operate at LOS C during the AM peak and PM peak hours. Under build conditions, the intersection is expected to continue to operate at LOS C during the AM and PM peak hours. No improvements are warranted or recommended at this intersection at build-out of the proposed convenience store.

Table 3 summarizes the capacity analysis results for the signalized intersection of Sudley Road at Stonewall Road, and the Synchro and SimTraffic outputs are enclosed for reference.

Table 3
Level-of-Service Summary for Sudley Road at Stonewall Road

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay)
Existing (2021) Traffic Conditions	EBL	A	7.7	59	B (17.0 sec)	B	18.3	90	C (25.2 sec)
	EBT/R	A	9.9	270		B	19.3	464	
	WBL	A	8.9	46		B	13.6	65	
	WBT/R	B	14.0	220		C	20.3	356	
	NBL	E	68.7	141		E	71.1	182	
	NBL/T	E	68.6	179		E	70.9	244	
	NBR	A	0.0	122		A	0.0	175	
	SBL/T	E	69.7	126		E	73.4	242	
	SBR	E	65.2	50		E	60.3	63	
No-Build (2023) Traffic Conditions	EBL	A	7.8	67	B (17.1 sec)	B	19.4	86	C (25.7 sec)
	EBT/R	B	10.0	264		C	20.1	502	
	WBL	A	9.0	56		B	14.1	70	
	WBT/R	B	14.2	232		C	20.8	368	
	NBL	E	68.7	121		E	71.3	168	
	NBL/T	E	68.5	168		E	71.1	225	
	NBR	A	0.0	16		A	0.0	116	
	SBL/T	E	69.7	113		E	73.4	213	
	SBR	E	65.2	52		E	60.2	62	
Build (2023) Traffic Conditions	EBL	C	24.7	59	C (26.3 sec)	C	32.1	106	C (32.9 sec)
	EBT/R	C	32.0	303		D	36.0	529	
	WBL	A	9.1	48		B	14.6	67	
	WBT/R	B	14.5	140		C	21.3	436	
	NBL	E	68.8	108		E	71.0	175	
	NBL/T	E	68.6	176		E	71.5	223	
	NBR	A	0.0	87		A	0.0	139	
	SBL/T	E	69.7	140		E	73.4	212	
	SBR	E	65.2	62		E	60.2	66	

Capacity analysis indicates that the intersection currently operates at LOS B during the AM peak hour and LOS C during the PM peak hour. Under no-build conditions, the intersection is expected to continue to operate at LOS B during the AM peak hour and LOS C during the PM peak hour, with the following improvements to be installed by the City:

- Construct a westbound shared through-right turn lane on Sudley Road

Under build conditions, the intersection is expected to operate at LOS C during the AM and PM peak hours. Note that the longest queue on southbound Stonewall Road is 242 feet and occurs during Existing PM condition. The stop control on the Sudley Service Road should not impact queueing and the signal will continue to function as it does today. The stop control on Sudley Service Road should not impact queueing and no improvements are warranted or recommended at this intersection at build-out of the proposed convenience store.

Table 4 summarizes the capacity analysis results for the unsignalized intersection of Sudley Road at Right-in / Right-out Site Driveway, and the Synchro outputs are enclosed for reference.

Table 4
Level-of-Service Summary for Sudley Road at Right-in / Right-out Site Driveway

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ²	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ²
Build (2023) Traffic Conditions	EBT	-	-	-	N/A	-	-	-	N/A
	EBR	-	-	-		-	-	-	
	WBT	-	-	-		-	-	-	
	NBR ¹	B	14.4	81		C	19.1	99	

1. Level of service for minor approach
2. HCM methodology does not provide lane group or overall LOS, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

Under build conditions, the major street right-turn movement is projected to operate with short delays (less than 25 seconds) during the AM and PM peak hours with the following improvement:

- Construct an eastbound right-turn lane on Sudley Road

Table 5 summarizes the capacity analysis results for the unsignalized intersection of Champion Court at Full-movement Site Driveway, and the Synchro outputs are enclosed for reference.

Table 5
Level-of-Service Summary for Champion Court at Full-movement Site Driveway

CONDITION	LANE GROUP	AM PEAK HOUR				PM PEAK HOUR			
		Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ³	Lane LOS	Lane Delay (sec)	Queue (ft)	Overall LOS (Delay) ³
Build (2023) Traffic Conditions	EBL/T ²	A	7.5	14	N/A	A	7.4	6	N/A
	WBT/R	-	-	-		-	-	-	
	SBL/R ¹	A	8.8	73		A	8.7	68	

1. Level of service for minor approach
2. Level of service for major street left-turn movement
3. HCM methodology does not provide lane group or overall LOS, delay, and queue lengths for major street through movements or right turns at unsignalized intersections.

Under build conditions, the minor street right-turn movement is expected to operate with short delays (less than 25 seconds) during the AM and PM peak hours with queue lengths of less than three vehicles.

No improvements are warranted or recommended at this intersection at build-out of the proposed convenience store.



Recommendations

Based on the capacity analysis, the following off-site roadway improvement is warranted to mitigate the proposed Wawa trips:

Sudley Road at Right-in / Right-out Site Driveway:

- Install an eastbound right-turn lane on Sudley Road

We appreciate your attention to this matter. Please contact me at (804) 217-8560 if you have any questions about this report.

Sincerely yours,

Ramey Kemp & Associates, Inc.



Michael Bailey, P.E., PTOE
State Traffic Operations Lead

Enclosures: Figures, VDOT Pre-Scope Form, Traffic count data, Synchro outputs, VDOT turn lane warrant

Copy to: Mr. Roger Franz, Net Lease Development
Mr. Mark Huonder, Net Lease Development
Mr. Ryan Yauger, P.E., Bohler Engineering



Inset



Overview

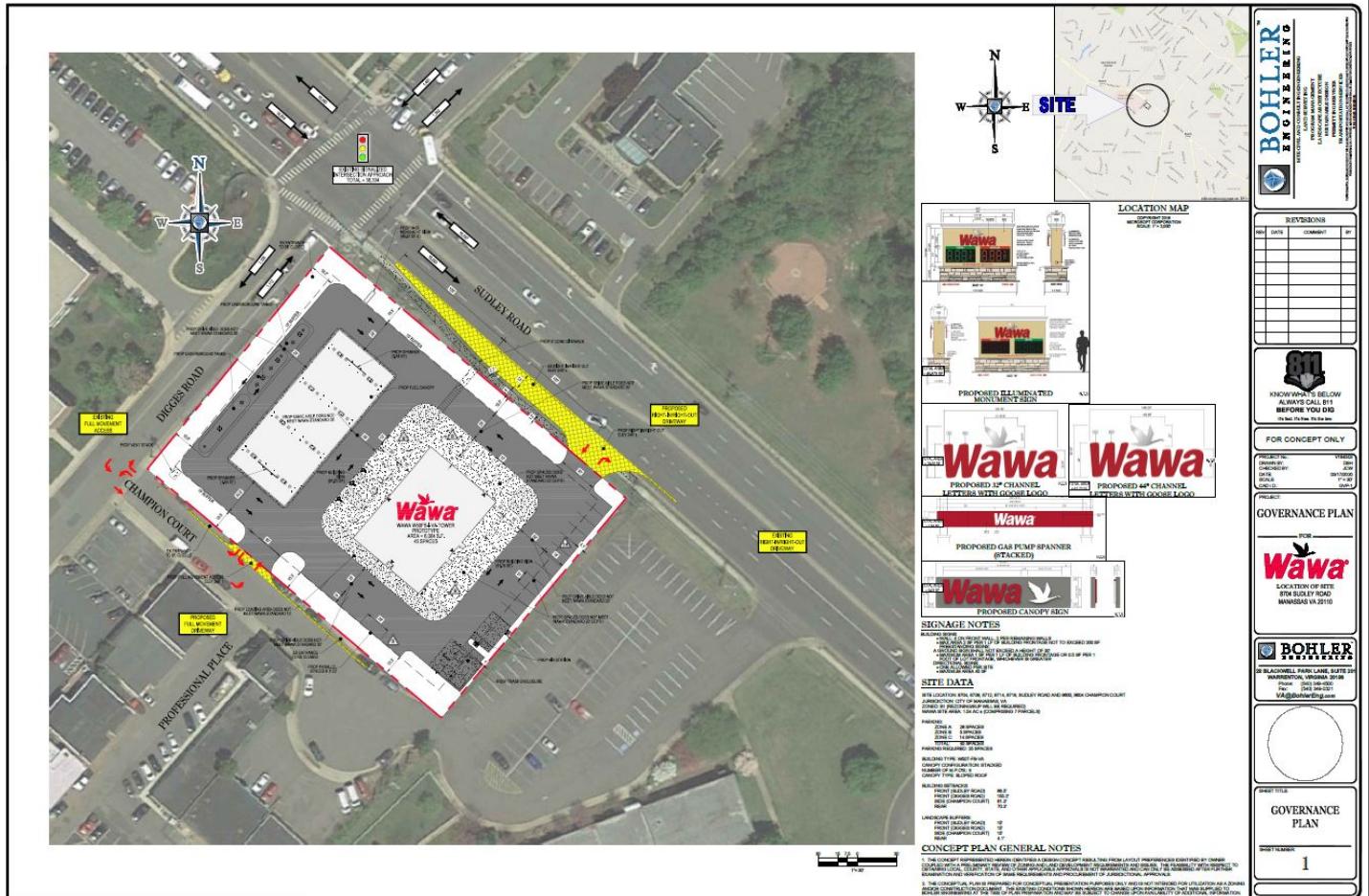
Moving forward.



Wawa
Digges Road
Manassas, Virginia

Site Location and
Study Intersections

Scale: Not to Scale Figure 1

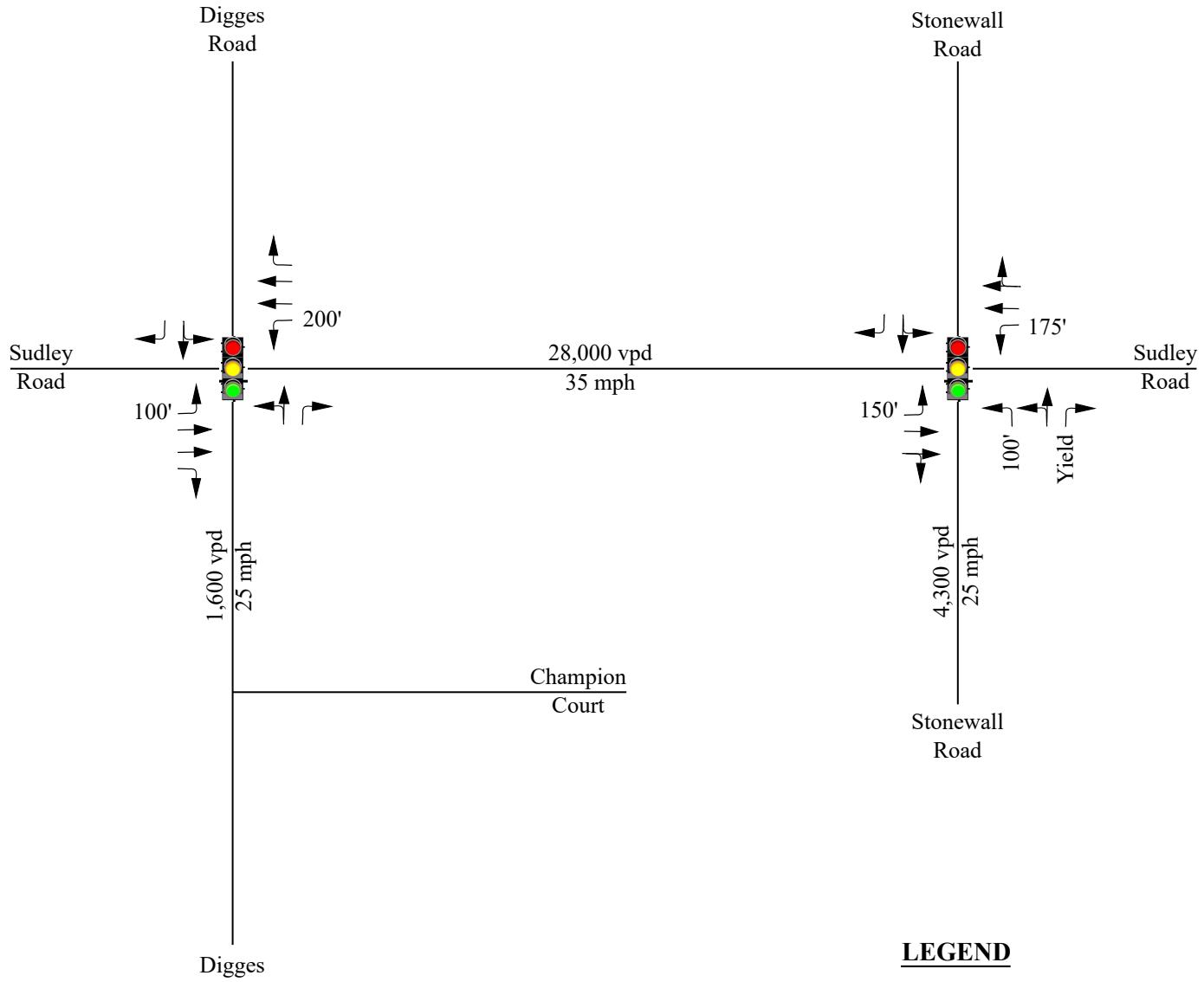


Wawa
Digges Road
Manassas, Virginia

Preliminary Site Plan

Scale: Not to Scale

Figure 2

**LEGEND**

- Existing Traffic Signal
- Existing Lane
- X' Storage (In Feet)

Moving forward.

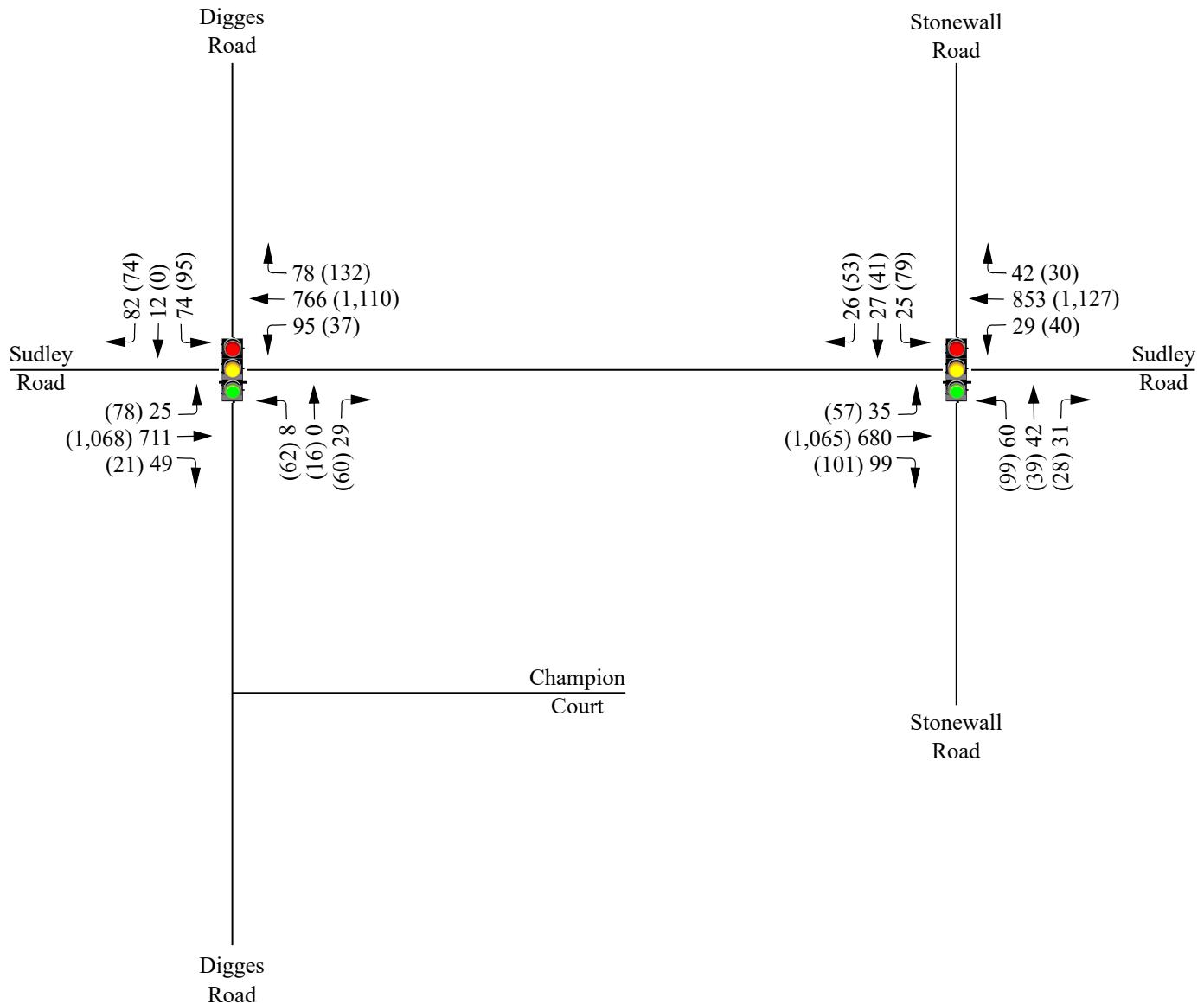


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Existing Lane Configuration

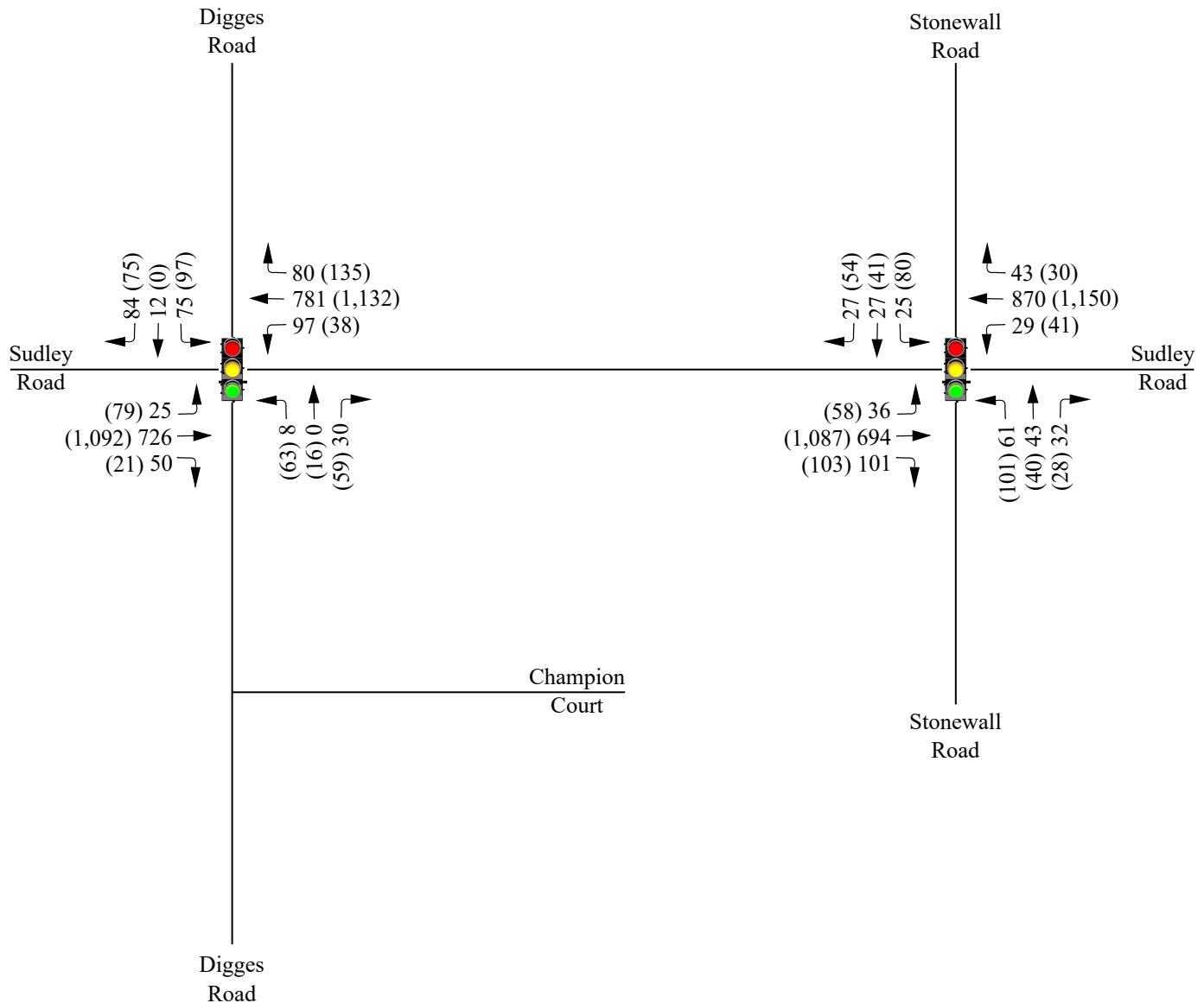
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Figure 3

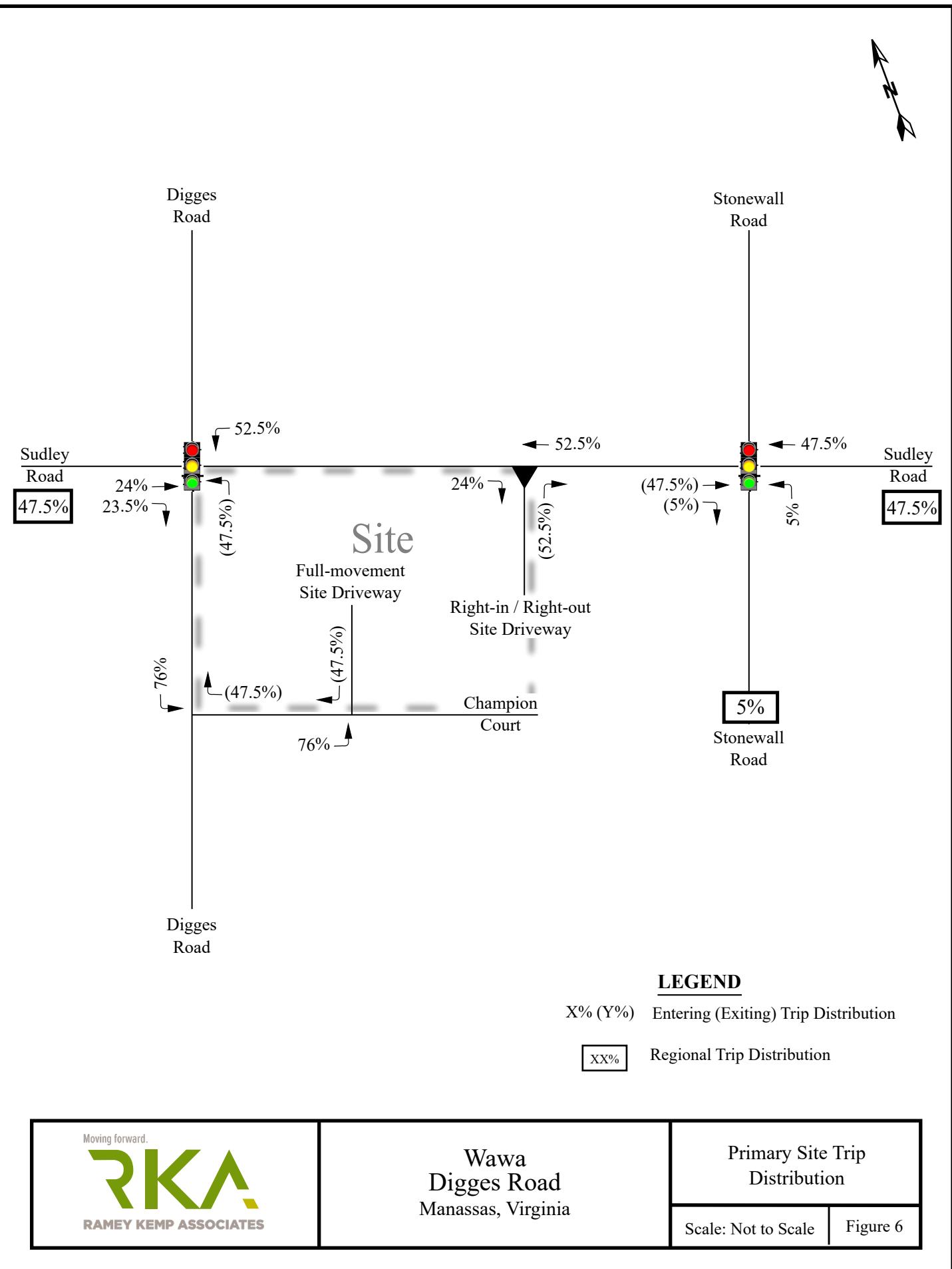
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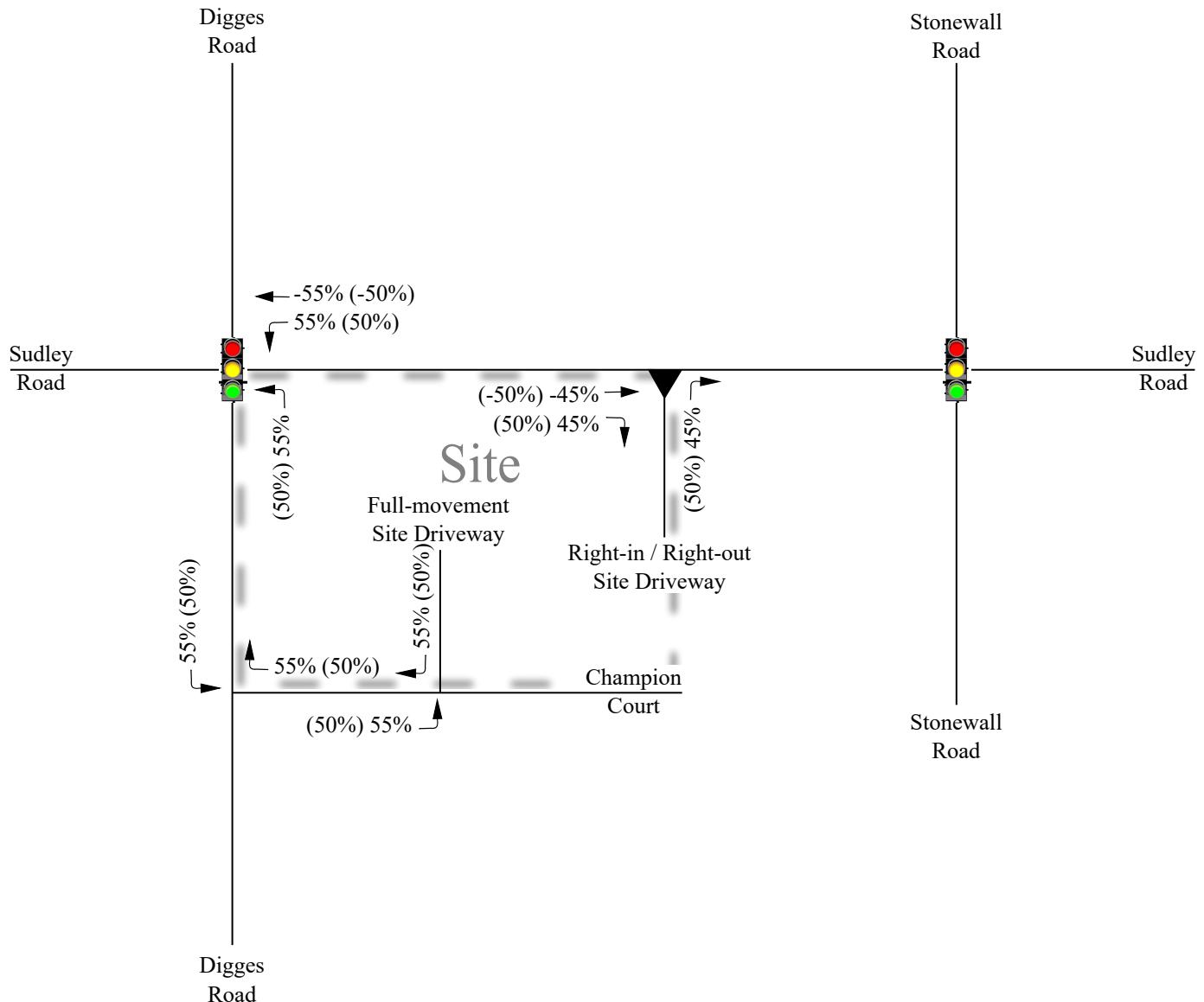
X (Y) AM (PM) Peak Hour

<small>Moving forward.</small> RKA <small>RAMEY KEMP ASSOCIATES</small>	Wawa Diggs Road Manassas, Virginia	Existing (2021) Peak Hour Traffic Volumes
Scale: Not to Scale		Figure 4

**LEGEND**

X (Y) AM (PM) Peak Hour



**LEGEND**

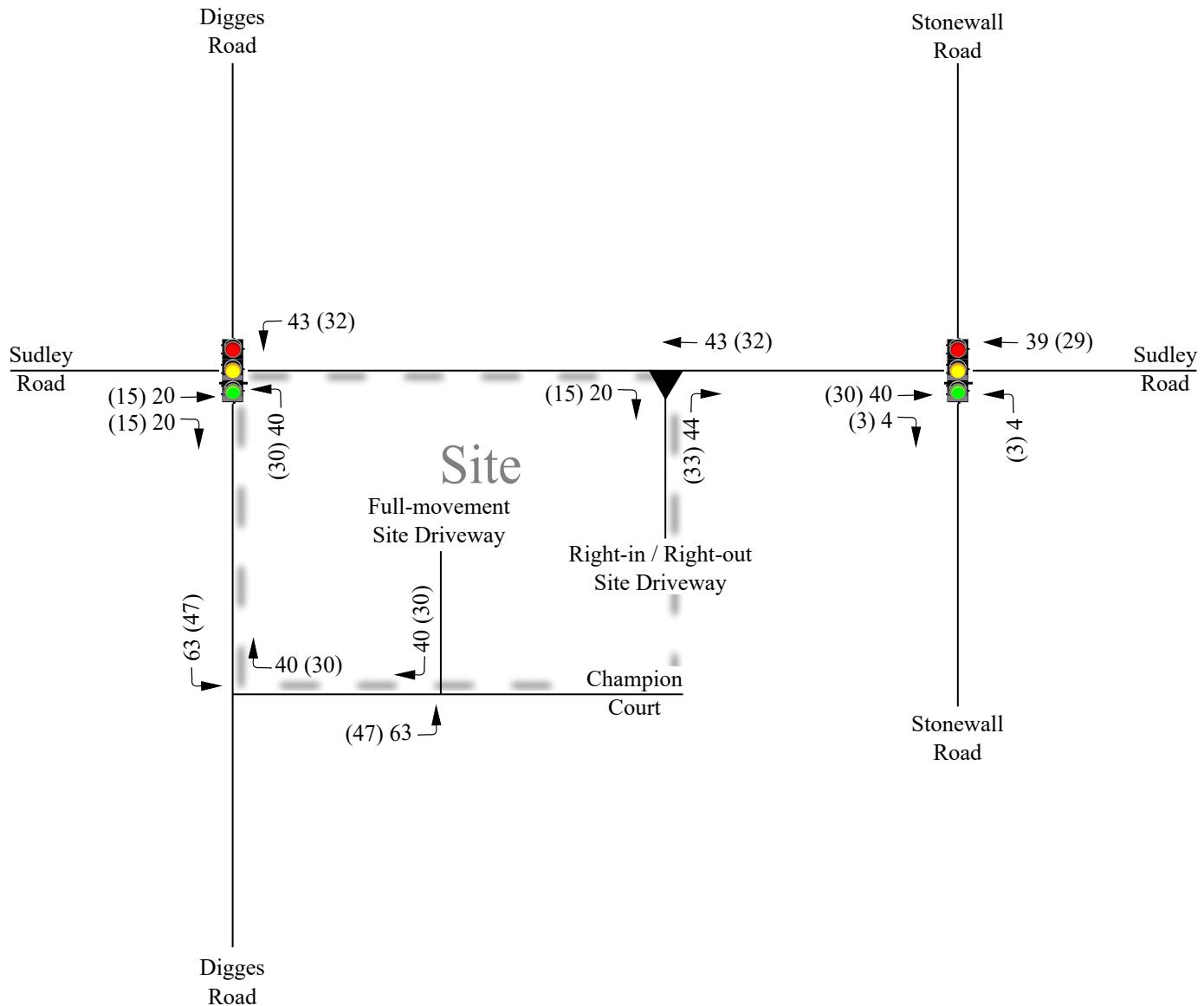
X% (Y%) AM (PM) Trip Distribution



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Digges Road
Manassas, Virginia

Pass-By Site Trip
Distribution

Scale: Not to Scale	Figure 7
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**LEGEND**

X (Y) AM (PM) Peak Hour

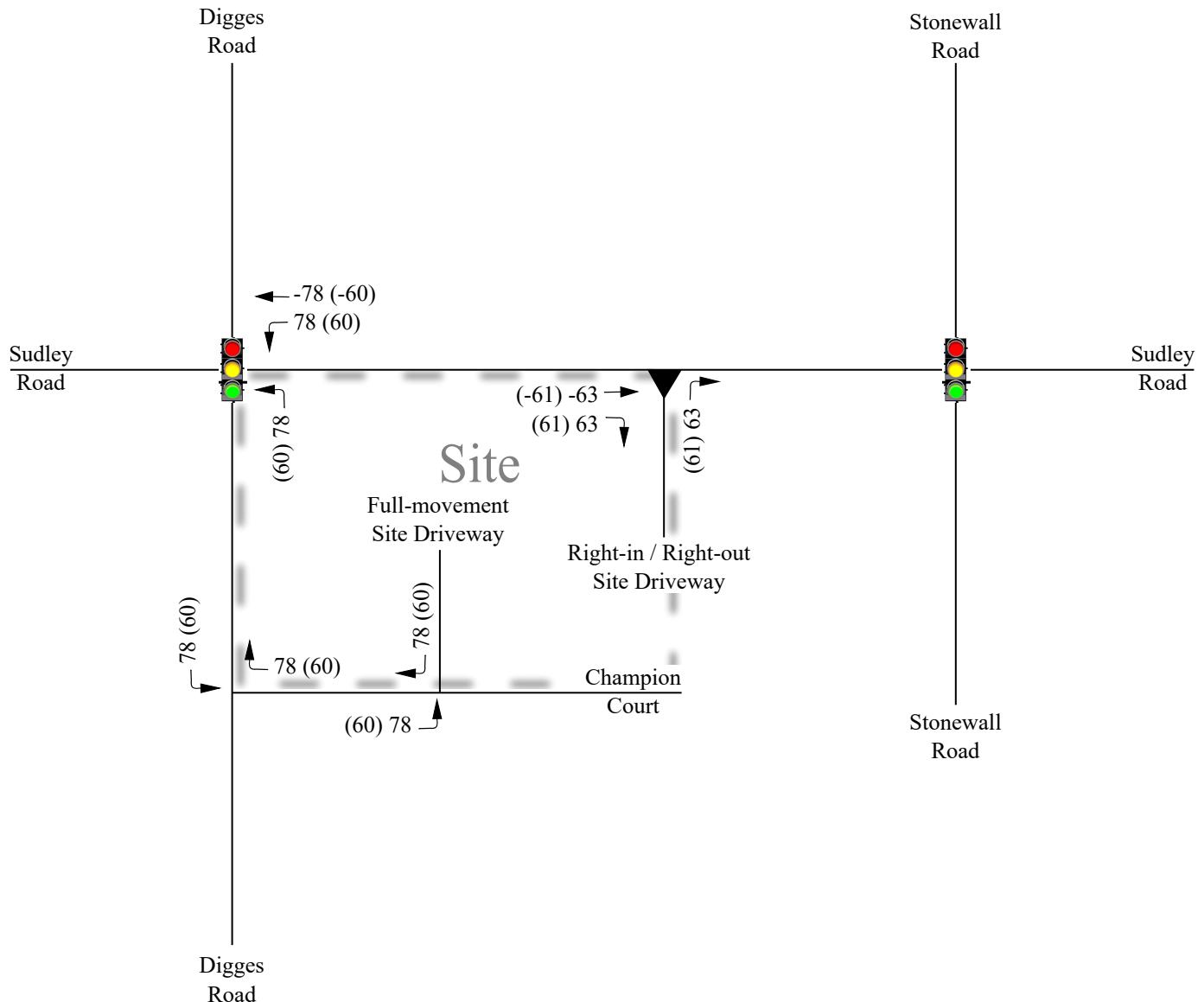
Moving forward.



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Manassas, Virginia

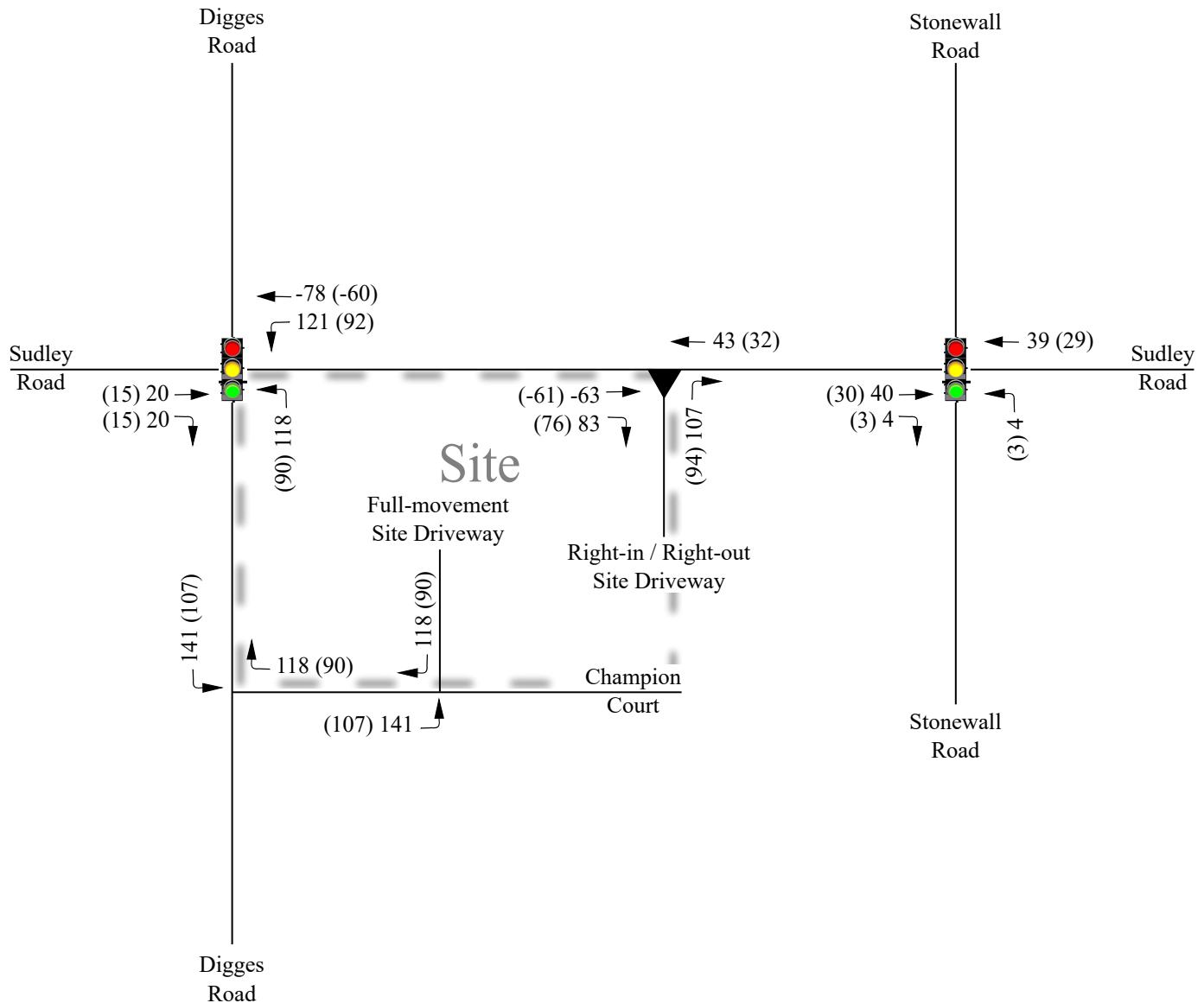
Primary Site Trip
Assignment

Scale: Not to Scale | Figure 8



LEGEND

X% (Y%) AM (PM) Trip Distribution



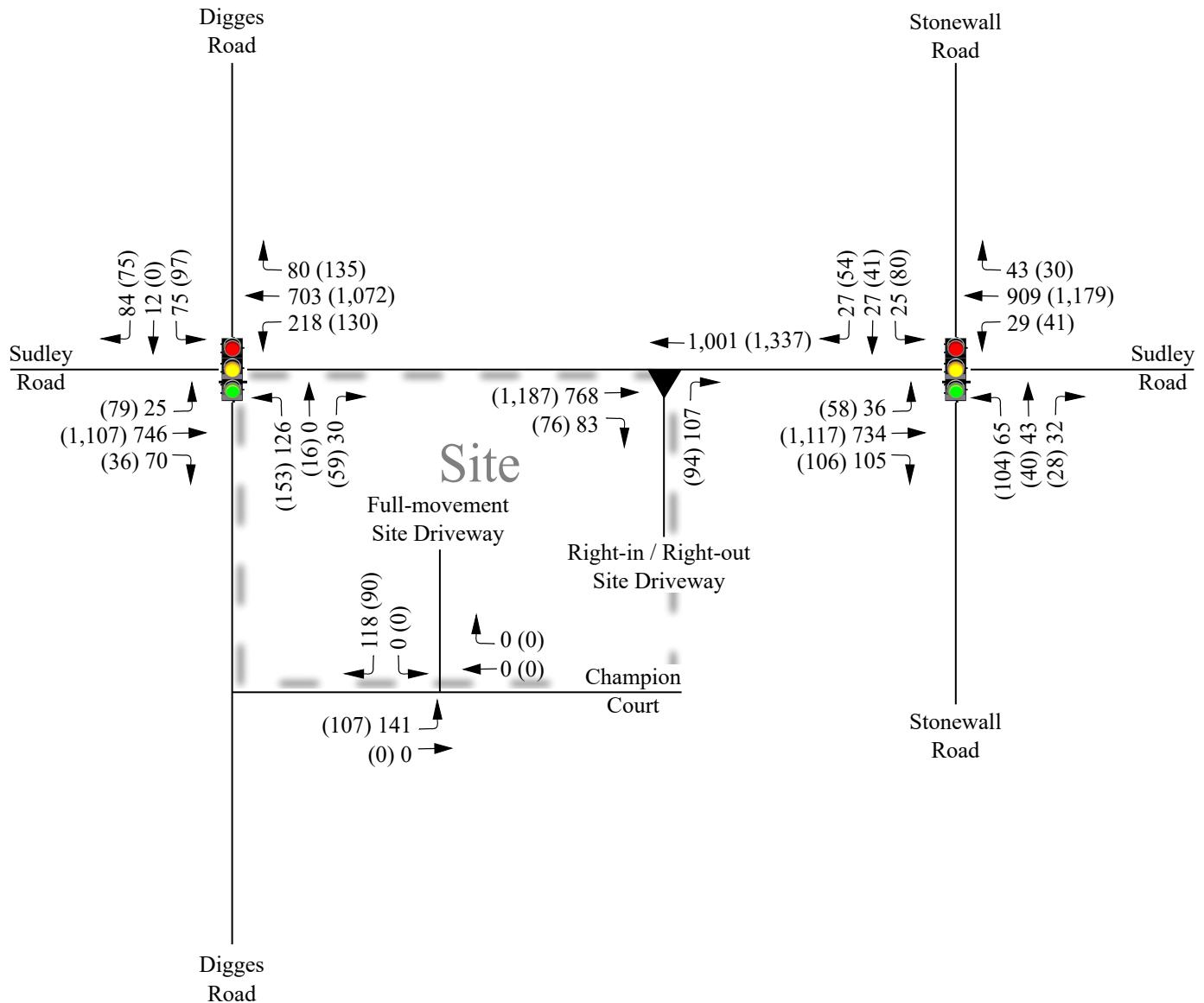
Moving forward.

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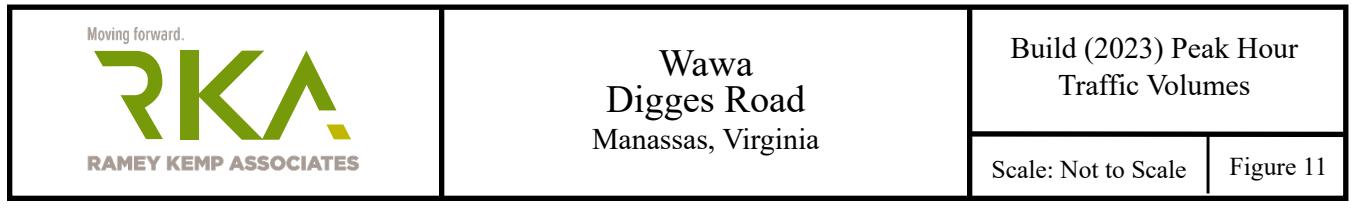
Wawa
Digges Road
Manassas, Virginia

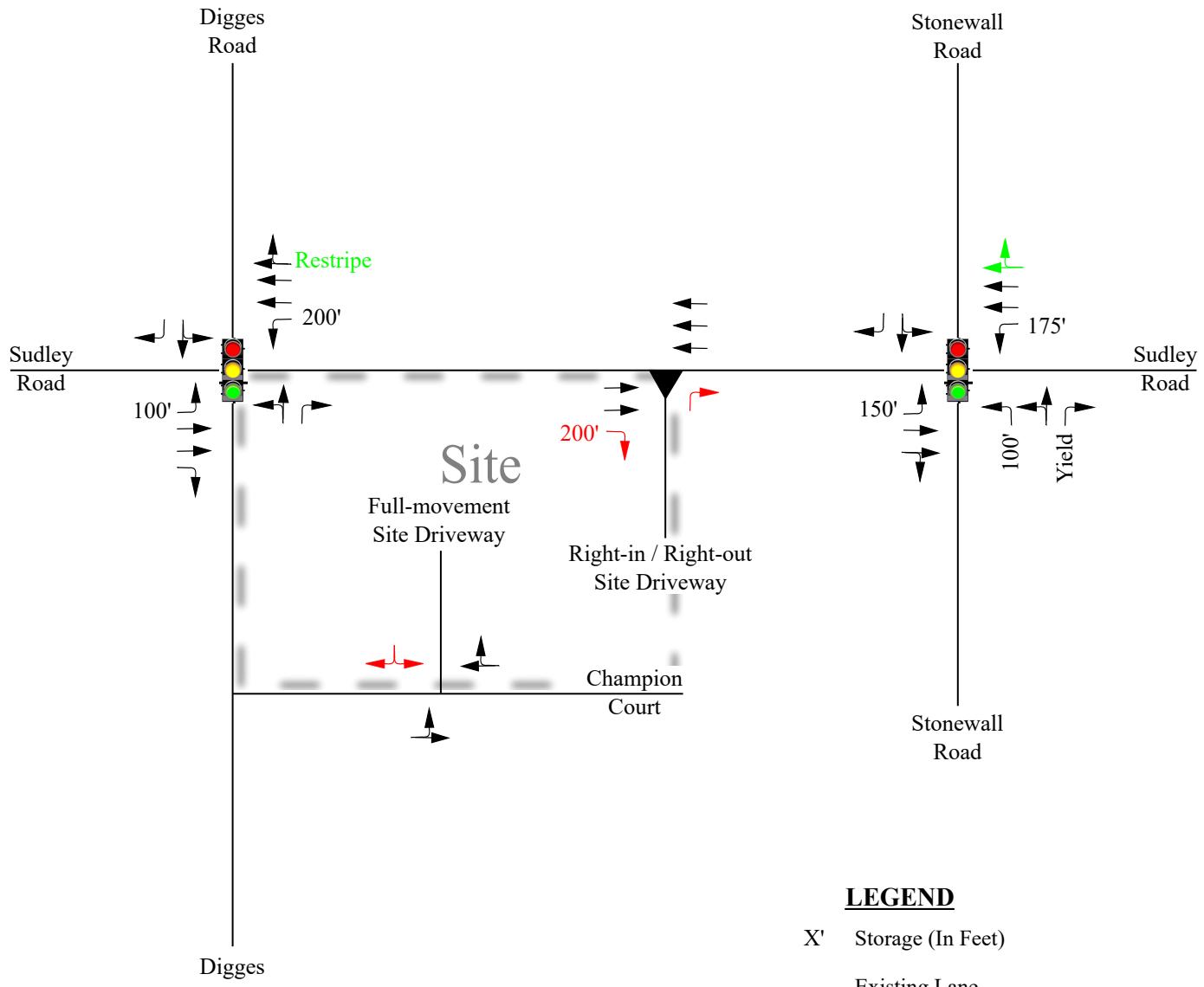
Total Site Trips

Scale: Not to Scale | Figure 10

**LEGEND**

X (Y) AM (PM) Peak Hour Traffic



**LEGEND**

- X' Storage (In Feet)
- Existing Lane
- Recommended Lane
- Improvement to be made by the City
- Existing Traffic Signal

<small>Moving forward.</small> RKA <small>RAMEY KEMP ASSOCIATES</small>	Wawa Diggs Road Manassas, Virginia	Recommended Lane Configuration
Scale: Not to Scale		Figure 12



PRE-SCOPE OF WORK MEETING FORM

Information on the Project Traffic Impact Analysis Base Assumptions

The applicant is responsible for entering the relevant information and submitting the form to VDOT and the locality no less than three (3) business days prior to the meeting. If a form is not received by this deadline, the scope of work meeting may be postponed.

Contact Information

Consultant Name:	Ramey Kemp & Associates, Inc. / Michael Bailey, P.E., PTOE
Tele:	(804) 217-8560
E-mail:	chultgren@rameykemp.com
Developer/Owner Name:	Net Lease Development - Mr. Mark Huonder
Tele:	(651) 357-5723
E-mail:	mh@netleasedev.com

Project Information

Project Name:	Wawa - Digges Road		Locality/County:	Manassas
Project Location: (Attach regional and site specific location map)	Refer to Figure 1			
Submission Type	Comp Plan <input type="checkbox"/>	Rezoning <input checked="" type="checkbox"/>	Site Plan <input type="checkbox"/>	Subd Plat <input type="checkbox"/>
Project Description: (Including details on the land use, acreage, phasing, access location, etc. Attach additional sheet if necessary)	The property is in the south quadrant of the Route 234 Business (Sudley Road) at Digges Road intersection. The applicant is proposing to demolish the three small commercial buildings and construct a new convenience store. The proposed access plan includes closing the existing full-movement driveway on Digges Road, maintaining the right-in / right-out on Sudley Road and closing one of the two existing full-movement driveways on Champion Court.			
Proposed Use(s): (Check all that apply; attach additional pages as necessary)	Residential <input type="checkbox"/>	Commercial <input checked="" type="checkbox"/>	Mixed Use <input type="checkbox"/>	Other <input type="checkbox"/>

Residential Uses(s) Number of Units: _____ ITE LU Code(s): _____ Commercial Use(s) ITE LU Code(s): _____ Square Ft or Other Variable: _____	See trip table Other Use(s) ITE LU Code(s): _____ Independent Variable(s): _____	_____

	_____	_____
	_____	_____

Total Peak Hour Trip Projection:	Less than 100 <input type="checkbox"/>	100 – 499 <input checked="" type="checkbox"/>	500 – 999 <input type="checkbox"/>	1,000 or more <input type="checkbox"/>
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It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Traffic Impact Analysis Assumptions			
Study Period	Existing Year: 2021	Build-out Year: 2023	Design Year: 2023
Study Area Boundaries (Attach map)	North: See Figure 1		South:
	East:		West:
External Factors That Could Affect Project (Planned road improvements, other nearby developments)	3rd northbound lane on Sudley		
Consistency With Comprehensive Plan (Land use, transportation plan)	Existing zoning is B1 Rezoning / SUP will be required		
Available Traffic Data (Historical, forecasts)	Sudley Road - 27,000 vpd in 2014 / 28,000 vpd in 2019 Stonewall Road - 4,200 vpd in 2014 / 4,300 vpd in 2019		
Trip Distribution (Attach sketch)	Road Name: See Figure 2		Road Name:
	Road Name:		Road Name:
Annual Vehicle Trip Growth Rate:	1%	Peak Period for Study (check all that apply)	<input checked="" type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input type="checkbox"/> SAT
		Peak Hour of the Generator	
Study Intersections and/or Road Segments (Attach additional sheets as necessary)	1.Sudley Road at Digges Road		6.
	2.Sudley Road at Proposed Right-in / Right-out Driveway		7.
	3.Sudley Road at Stonewall Road		8.
	4.Champion Court at Full-movement Driveway		9.
	5.		10.
Trip Adjustment Factors	Internal allowance: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Reduction: _____ % trips		Pass-by allowance: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Reduction: ITE% trips
Software Methodology	<input checked="" type="checkbox"/> Synchro <input type="checkbox"/> HCS (v.2000/+) <input type="checkbox"/> aaSIDRA <input type="checkbox"/> CORSIM <input checked="" type="checkbox"/> Other SimTraffic		
Traffic Signal Proposed or Affected (Analysis software to be used, progression speed, cycle length)	Synchro / SimTraffic 10 will be used to analyze LOS, delay, and queueing at the study intersections.		

It is important for the applicant to provide sufficient information to county and VDOT staff so that questions regarding geographic scope, alternate methodology, or other issues can be answered at the scoping meeting.

Improvement(s) Assumed or to be Considered	The need for turn lanes and other off-site improvements will be determined based on the results of the TIA.		
Background Traffic Studies Considered	3rd northbound lane on Sudley Road		
Plan Submission	<input type="checkbox"/> Master Development Plan (MDP) <input type="checkbox"/> Generalized Development Plan (GDP) <input type="checkbox"/> Preliminary/Sketch Plan <input checked="" type="checkbox"/> Other Plan type (Final Site, Subd. Plan)		
Additional Issues to be Addressed	<input checked="" type="checkbox"/> Queuing analysis <input checked="" type="checkbox"/> Actuation/Coordination <input type="checkbox"/> Weaving analysis <input type="checkbox"/> Merge analysis <input type="checkbox"/> Bike/Ped Accommodations <input checked="" type="checkbox"/> Intersection(s) <input type="checkbox"/> TDM Measures <input type="checkbox"/> Other _____		

NOTES on ASSUMPTIONS:

The TIA will include three analysis scenarios:

- Existing (2021) Traffic Conditions
- No-Build (2023) Traffic Conditions
- Build (2023) Traffic Conditions

RKA will use both City and VDOT turn lane warrants

SIGNED:

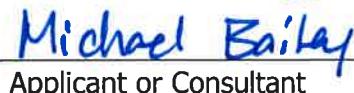


Applicant or Consultant

DATE:



PRINT NAME:



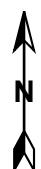
Applicant or Consultant



Inset



Inset



LEGEND

Study Intersection



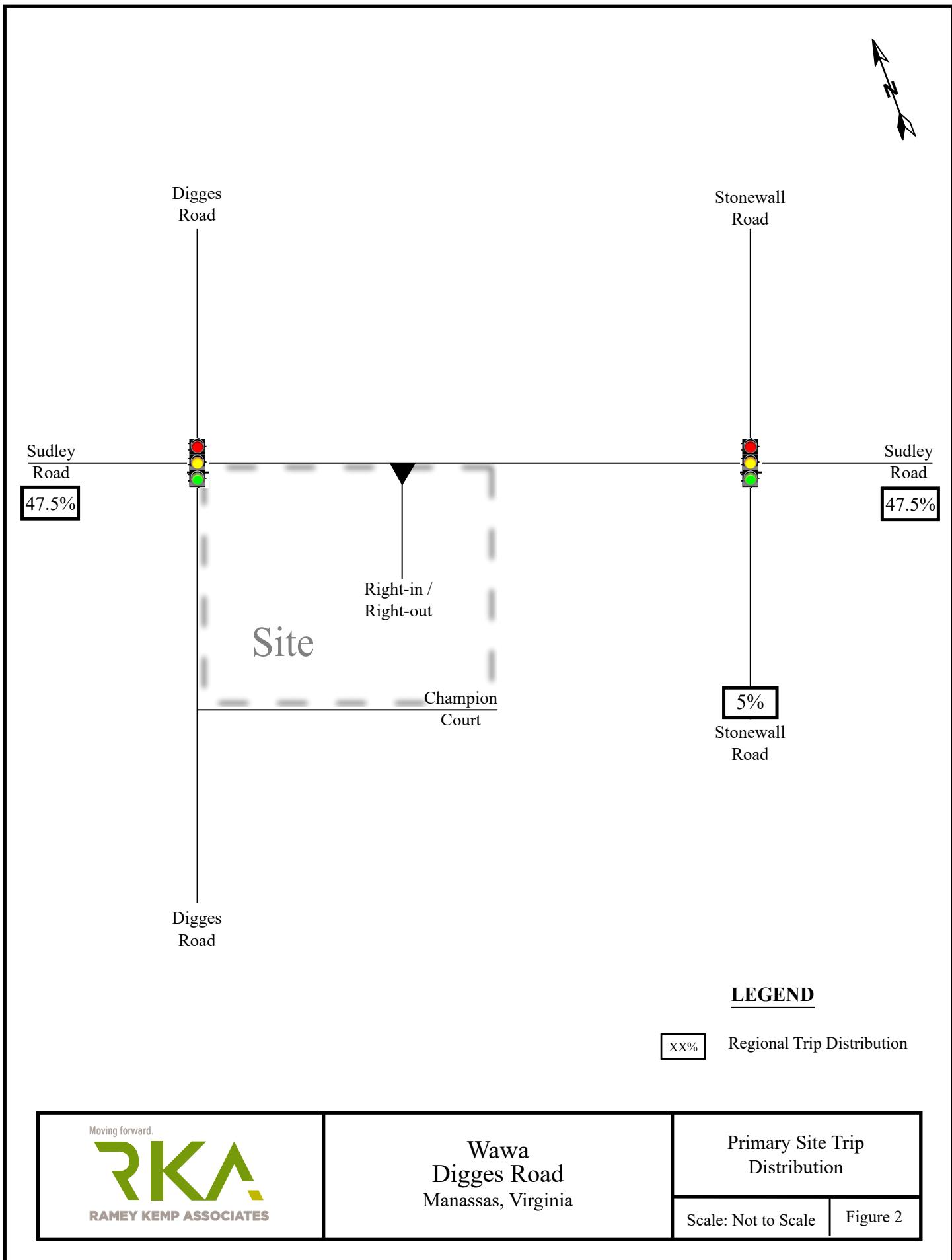
Site Boundary



Wawa
Digges Road
Manassas, Virginia

Site Location and
Study Intersections

Scale: Not to Scale Figure 1



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4343 Cox Road
Glen Allen, VA 23060**Wawa – Digges
Manassas, VA****ITE Trip Generation – Weekday – 10th Edition**

Land Use (ITE Land Use Code)	Size	Weekday Daily Traffic (vpd)		AM Peak Hour (vph)		PM Peak Hour (vph)	
		Enter	Exit	Enter	Exit	Enter	Exit
Super Convenience Market / Gas Station (960)	16 f.p.	1,844	1,844	224	225	183	184
ITE Pass-by Trips: 63% AM / 66% PM		-1,189	-1,189	-141	-141	-121	-121
New Primary Trips		655	655	83	84	62	63

December 14, 2020

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File Name: J:\! DATA FILES\18-14.01A&02 - Manassas\TMC\01A\Vehs\15 min spot counts\03 Sudley Rd at Digges Rd.ppd

Start Date: 10/17/2018

Start Time: 7:30:00 AM

Site Code: 00000000

Comment 1: Weather: Clear

Comment 2: Counted By: Deb

Comment 3: Town: Manassas

Comment 4:

	DIGGES RD From North				SUDLEY RD From East				DIGGES RD From South				SUDLEY RD From West			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
07:30 AM	18	3	20	0	23	227	19	0	2	0	7	0	6	155	12	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	27	5	16	0	23	228	27	0	20	5	12	1	23	234	15	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	23	0	18	0	9	276	32	0	15	4	14	0	19	304	5	0

MANASSAS
MANASSAS**Sabra & Associates**7055 Samuel Morse Dr
Ste 100
Columbia, MD 21046
443-741-3500Site Code: 000000000000
Station ID: 000000000000

SUDLEY RD EAST OF STONEWALL RD

Latitude: 0' 0.0000 Undefined

Start Time	24-Oct-18 Wed	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		24	230			32	234				
12:15		15	242			17	231				
12:30		21	218			13	218				
12:45		12	244	72	934	12	240	74	923	146	1857
01:00		12	247			7	209				
01:15		16	208			12	216				
01:30		16	232			9	222				
01:45		9	232	53	919	7	262	35	909	88	1828
02:00		18	246			12	218				
02:15		10	248			8	243				
02:30		11	245			8	265				
02:45		7	262	46	1001	6	245	34	971	80	1972
03:00		7	268			6	240				
03:15		12	284			8	258				
03:30		10	274			10	280				
03:45		20	260	49	1086	16	262	40	1040	89	2126
04:00		7	302			14	266				
04:15		14	339			24	262				
04:30		25	268			30	234				
04:45		38	254	84	1163	39	260	107	1022	191	2185
05:00		46	317			64	288				
05:15		48	307			74	278				
05:30		82	311			100	284				
05:45		86	327	262	1262	132	242	370	1092	632	2354
06:00		114	260			128	268				
06:15		114	222			116	271				
06:30		124	240			153	269				
06:45		134	248	486	970	148	258	545	1066	1031	2036
07:00		150	215			168	194				
07:15		144	222			174	220				
07:30		158	194			220	182				
07:45		218	177	670	808	254	168	816	764	1486	1572
08:00		196	196			234	169				
08:15		183	191			210	161				
08:30		173	156			242	120				
08:45		209	136	761	679	271	118	957	568	1718	1247
09:00		226	142			260	108				
09:15		196	147			242	74				
09:30		178	120			204	82				
09:45		208	83	808	492	230	71	936	335	1744	827
10:00		170	88			227	71				
10:15		192	76			206	61				
10:30		190	58			210	48				
10:45		178	63	730	285	240	50	883	230	1613	515
11:00		188	48			218	38				
11:15		175	36			187	35				
11:30		200	38			232	29				
11:45		185	26	748	148	239	25	876	127	1624	275
Total		4769	9747			5673	9047			10442	18794
Percent		32.9%	67.1%			38.5%	61.5%			35.7%	64.3%

MANASSAS
MANASSAS**Sabra & Associates**7055 Samuel Morse Dr
Ste 100
Columbia, MD 21046
443-741-3500Site Code: 000000000000
Station ID: 000000000000

SUDLEY RD EAST OF STONEWALL RD

Latitude: 0° 0.0000 Undefined

Start Time	25-Oct-18 Thu	EB		Hour Totals		WB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		20	187			25	240				
12:15		23	230			21	218				
12:30		16	216			24	230				
12:45		18	216	77	849	9	244	79	932	156	1781
01:00		18	202			9	220				
01:15		18	216			10	266				
01:30		12	230			10	230				
01:45		16	228	64	876	12	256	41	972	105	1848
02:00		9	223			10	208				
02:15		8	248			6	254				
02:30		8	266			13	280				
02:45		12	227	37	964	4	242	33	984	70	1948
03:00		10	276			6	230				
03:15		3	290			9	258				
03:30		8	338			9	292				
03:45		21	312	42	1216	15	270	39	1050	81	2266
04:00		10	294			20	250				
04:15		8	284			18	276				
04:30		24	292			30	267				
04:45		42	322	84	1192	39	272	107	1065	191	2257
05:00		29	314			67	318				
05:15		56	312			67	252				
05:30		82	302			90	280				
05:45		90	292	257	1220	129	274	353	1124	610	2344
06:00		108	297			110	246				
06:15		124	271			112	280				
06:30		124	242			146	248				
06:45		136	247	492	1057	154	246	522	1020	1014	2077
07:00		136	238			162	216				
07:15		140	234			178	203				
07:30		154	232			224	170				
07:45		216	213	646	917	241	155	805	744	1451	1661
08:00		177	190			220	153				
08:15		174	180			223	130				
08:30		181	154			235	118				
08:45		198	140	730	664	261	101	939	502	1669	1166
09:00		193	135			232	115				
09:15		184	119			207	114				
09:30		222	102			220	119				
09:45		204	117	803	473	206	96	865	444	1668	917
10:00		188	76			191	74				
10:15		164	76			214	62				
10:30		182	80			242	53				
10:45		216	60	750	292	209	41	856	230	1606	522
11:00		206	51			226	46				
11:15		164	60			212	36				
11:30		156	38			190	40				
11:45		176	26	702	175	234	22	862	144	1564	319
Total		4684	9895			5501	9211			10185	19106
Percent		32.1%	67.9%			37.4%	62.6%			34.8%	65.2%
Grand Total		9453	19642			11174	18258			20627	37900
Percent		32.5%	67.5%			38.0%	62.0%			35.2%	64.8%

ADT ADT 29,264 AADT 29,264

Wawa - Digges Road - Manassas, VA
1: Digges Road & Sudley Road

Existing (2021) Conditions

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑		↑	↑	↑	↑	↑
Traffic Volume (vph)	25	711	49	95	766	78	8	1	29	74	12	82
Future Volume (vph)	25	711	49	95	766	78	8	1	29	74	12	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7	6.6	6.6	6.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	0.85	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.96	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1783	1583	1786	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.96	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1783	1583	1786	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	773	53	103	833	85	9	1	32	80	13	89
RTOR Reduction (vph)	0	0	22	0	0	30	0	0	30	0	0	81
Lane Group Flow (vph)	27	773	31	103	833	55	0	10	2	0	93	8
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			4
Actuated Green, G (s)	5.4	88.3	88.3	14.0	97.4	97.4		8.0	8.0		13.1	13.1
Effective Green, g (s)	5.4	88.3	88.3	14.0	97.4	97.4		8.0	8.0		13.1	13.1
Actuated g/C Ratio	0.04	0.59	0.59	0.09	0.65	0.65		0.05	0.05		0.09	0.09
Clearance Time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7		6.6	6.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	63	2083	931	165	2297	1027		95	84		155	138
v/s Ratio Prot	0.02	0.22		c0.06	c0.24			c0.01			c0.05	
v/s Ratio Perm			0.02			0.03			0.00			0.00
v/c Ratio	0.43	0.37	0.03	0.62	0.36	0.05		0.11	0.02		0.60	0.06
Uniform Delay, d1	70.8	16.2	12.9	65.5	12.1	9.6		67.6	67.3		65.9	62.8
Progression Factor	1.00	1.00	1.00	1.51	0.31	0.11		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.6	0.5	0.1	6.7	0.4	0.1		0.5	0.1		6.1	0.2
Delay (s)	75.4	16.7	13.0	105.5	4.1	1.2		68.1	67.4		72.1	63.0
Level of Service	E	B	B	F	A	A		E	E		E	E
Approach Delay (s)		18.4			14.1			67.6			67.6	
Approach LOS		B			B			E			E	

Intersection Summary

HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	55.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Wawa - Digges Road - Manassas, VA
2: Stonewall Road & Sudley Road

Existing (2021) Conditions

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑	↑	↑	↑	↑
Traffic Volume (vph)	35	680	99	29	853	42	60	42	31	25	27	26
Future Volume (vph)	35	680	99	29	853	42	60	42	31	25	27	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.5	7.5	4.0		6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3472		1770	3514		1681	1752	1583		1819	1583
Flt Permitted	0.25	1.00		0.30	1.00		0.95	0.99	1.00		0.98	1.00
Satd. Flow (perm)	464	3472		567	3514		1681	1752	1583		1819	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	38	731	106	31	917	45	65	45	33	27	29	28
RTOR Reduction (vph)	0	5	0	0	1	0	0	0	0	0	0	26
Lane Group Flow (vph)	38	832	0	31	961	0	54	56	33	0	56	2
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Free	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2			6					Free			4
Actuated Green, G (s)	102.6	97.3		100.0	96.0		11.2	11.2	150.0		10.3	10.3
Effective Green, g (s)	102.6	97.3		100.0	96.0		11.2	11.2	150.0		10.3	10.3
Actuated g/C Ratio	0.68	0.65		0.67	0.64		0.07	0.07	1.00		0.07	0.07
Clearance Time (s)	6.6	6.6		6.6	6.6		7.5	7.5			6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	363	2252		410	2248		125	130	1583		124	108
v/s Ratio Prot	c0.00	0.24		0.00	c0.27		c0.03	0.03			c0.03	
v/s Ratio Perm	0.07			0.05					c0.02			0.00
v/c Ratio	0.10	0.37		0.08	0.43		0.43	0.43	0.02		0.45	0.02
Uniform Delay, d1	8.6	12.2		8.8	13.4		66.4	66.4	0.0		67.1	65.1
Progression Factor	0.89	0.78		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.4		0.1	0.6		2.4	2.3	0.0		2.6	0.1
Delay (s)	7.7	9.9		8.9	14.0		68.7	68.6	0.0		69.7	65.2
Level of Service	A	A		A	B		E	E	A		E	E
Approach Delay (s)		9.8			13.8				52.8		68.2	
Approach LOS		A			B				D		E	

Intersection Summary

HCM 2000 Control Delay	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
Wawa - Digges Road - Manassas, VA

Existing (2021) Conditions
AM Peak Hour

Intersection: 1: Digges Road & Sudley Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	74	249	318	35	192	198	192	44	44	50	175	86
Average Queue (ft)	23	96	175	9	91	63	73	11	10	20	78	34
95th Queue (ft)	58	223	295	25	162	151	153	34	35	47	143	64
Link Distance (ft)		734	734	734		1184	1184	1184			379	379
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100					200						
Storage Blk Time (%)	0	2				0	0					
Queuing Penalty (veh)	1	1				1	0					

Intersection: 2: Stonewall Road & Sudley Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	59	258	270	46	276	220	141	179	122	126	50
Average Queue (ft)	19	77	86	12	137	88	17	88	6	45	17
95th Queue (ft)	49	172	192	34	243	193	80	160	59	95	45
Link Distance (ft)	1184	1184	1184	616	616	616		390		445	445
Upstream Blk Time (%)							200		75		
Queuing Penalty (veh)							0	27			
Storage Bay Dist (ft)							0				
Storage Blk Time (%)							0	16			
Queuing Penalty (veh)											

Zone Summary

Zone wide Queuing Penalty: 19

Wawa - Digges Road - Manassas, VA
1: Digges Road & Sudley Road

Existing (2021) Conditions

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑		↑	↑		↑	↑
Traffic Volume (vph)	78	1068	21	37	1110	132	62	16	60	95	1	74
Future Volume (vph)	78	1068	21	37	1110	132	62	16	60	95	1	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7		6.6	6.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1791	1583		1775	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1791	1583		1775	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	85	1161	23	40	1207	143	67	17	65	103	1	80
RTOR Reduction (vph)	0	0	9	0	0	54	0	0	60	0	0	72
Lane Group Flow (vph)	85	1161	14	40	1207	89	0	84	5	0	104	8
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			4
Actuated Green, G (s)	12.6	89.0	89.0	7.8	84.7	84.7		12.5	12.5		14.1	14.1
Effective Green, g (s)	12.6	89.0	89.0	7.8	84.7	84.7		12.5	12.5		14.1	14.1
Actuated g/C Ratio	0.08	0.59	0.59	0.05	0.56	0.56		0.08	0.08		0.09	0.09
Clearance Time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7		6.6	6.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	148	2099	939	92	1998	893		149	131		166	148
v/s Ratio Prot	c0.05	c0.33		0.02	c0.34			c0.05			c0.06	
v/s Ratio Perm			0.01			0.06			0.00			0.00
v/c Ratio	0.57	0.55	0.01	0.43	0.60	0.10		0.56	0.04		0.63	0.05
Uniform Delay, d1	66.1	18.5	12.5	69.0	21.6	15.1		66.1	63.2		65.4	61.9
Progression Factor	1.00	1.00	1.00	1.46	0.51	0.21		1.00	1.00		1.00	1.00
Incremental Delay, d2	5.3	1.1	0.0	2.8	1.2	0.2		4.8	0.1		7.2	0.1
Delay (s)	71.4	19.5	12.5	103.7	12.2	3.3		70.9	63.4		72.6	62.0
Level of Service	E	B	B	F	B	A		E	E		E	E
Approach Delay (s)		22.9			13.9			67.6			68.0	
Approach LOS		C			B			E			E	

Intersection Summary

HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Wawa - Digges Road - Manassas, VA
2: Stonewall Road & Sudley Road

Existing (2021) Conditions

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑	↑		↑	↑
Traffic Volume (vph)	57	1065	101	40	1127	30	99	39	28	79	41	53
Future Volume (vph)	57	1065	101	40	1127	30	99	39	28	79	41	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.5	7.5	4.0		6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	3493		1770	3525		1681	1731	1583		1804	1583
Flt Permitted	0.16	1.00		0.16	1.00		0.95	0.98	1.00		0.97	1.00
Satd. Flow (perm)	290	3493		291	3525		1681	1731	1583		1804	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	61	1133	107	43	1199	32	105	41	30	84	44	56
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	0	0	0	50
Lane Group Flow (vph)	61	1237	0	43	1230	0	72	74	30	0	128	6
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Free	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2			6					Free			4
Actuated Green, G (s)	95.6	89.4		94.6	88.9		11.8	11.8	150.0		15.9	15.9
Effective Green, g (s)	95.6	89.4		94.6	88.9		11.8	11.8	150.0		15.9	15.9
Actuated g/C Ratio	0.64	0.60		0.63	0.59		0.08	0.08	1.00		0.11	0.11
Clearance Time (s)	6.6	6.6		6.6	6.6		7.5	7.5			6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	246	2081		239	2089		132	136	1583		191	167
v/s Ratio Prot	c0.01	c0.35		0.01	0.35		c0.04	0.04			c0.07	
v/s Ratio Perm	0.15			0.11					c0.02			0.00
v/c Ratio	0.25	0.59		0.18	0.59		0.55	0.54	0.02		0.67	0.04
Uniform Delay, d1	13.3	19.0		13.3	19.1		66.5	66.5	0.0		64.5	60.2
Progression Factor	1.34	0.96		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	1.1		0.4	1.2		4.5	4.4	0.0		8.9	0.1
Delay (s)	18.3	19.3		13.6	20.3		71.1	70.9	0.0		73.4	60.3
Level of Service	B	B		B	C		E	E	A		E	E
Approach Delay (s)		19.3			20.1			58.9			69.4	
Approach LOS		B			C			E			E	

Intersection Summary

HCM 2000 Control Delay	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
Wawa - Digges Road - Manassas, VA

Existing (2021) Conditions
PM Peak Hour

Intersection: 1: Digges Road & Sudley Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	182	368	446	21	186	413	420	75	123	77	171	89
Average Queue (ft)	69	169	248	3	38	140	157	20	72	32	83	35
95th Queue (ft)	138	332	409	15	99	321	334	54	124	60	151	70
Link Distance (ft)		734	734	734		1184	1184	1184			379	379
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100					200						
Storage Blk Time (%)	6	7					4					
Queuing Penalty (veh)	31	5					1					

Intersection: 2: Stonewall Road & Sudley Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	90	451	464	65	393	356	182	244	175	242	63
Average Queue (ft)	33	211	229	22	227	190	37	122	15	106	27
95th Queue (ft)	70	393	412	52	366	326	136	210	94	193	55
Link Distance (ft)	1184	1184	1184	616	616	616		390		445	445
Upstream Blk Time (%)							200		75		
Queuing Penalty (veh)								0	39		
Storage Bay Dist (ft)								0	30		
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 5: Digges Road & Champion Court

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 69

Wawa - Digges Road - Manassas, VA
1: Digges Road & Sudley Road

No-Build (2023) Conditions

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑		↑	↑	↑	↑	↑
Traffic Volume (vph)	25	726	50	97	781	80	8	1	30	75	12	84
Future Volume (vph)	25	726	50	97	781	80	8	1	30	75	12	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7	6.6	6.6	6.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.96	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1783	1583	1786	1583	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00	0.96	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1783	1583	1786	1583	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	789	54	105	849	87	9	1	33	82	13	91
RTOR Reduction (vph)	0	0	22	0	0	31	0	0	31	0	0	83
Lane Group Flow (vph)	27	789	32	105	849	56	0	10	2	0	95	8
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			4
Actuated Green, G (s)	5.4	87.9	87.9	14.2	97.2	97.2		8.0	8.0		13.3	13.3
Effective Green, g (s)	5.4	87.9	87.9	14.2	97.2	97.2		8.0	8.0		13.3	13.3
Actuated g/C Ratio	0.04	0.59	0.59	0.09	0.65	0.65		0.05	0.05		0.09	0.09
Clearance Time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7		6.6	6.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	63	2073	927	167	2293	1025		95	84		158	140
v/s Ratio Prot	0.02	0.22		c0.06	c0.24			c0.01			c0.05	
v/s Ratio Perm			0.02			0.04			0.00			0.01
v/c Ratio	0.43	0.38	0.03	0.63	0.37	0.06		0.11	0.02		0.60	0.06
Uniform Delay, d1	70.8	16.5	13.1	65.4	12.2	9.6		67.6	67.3		65.8	62.6
Progression Factor	1.00	1.00	1.00	1.50	0.31	0.10		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.6	0.5	0.1	6.7	0.4	0.1		0.5	0.1		6.3	0.2
Delay (s)	75.4	17.1	13.2	104.7	4.2	1.1		68.1	67.4		72.1	62.8
Level of Service	E	B	B	F	A	A		E	E		E	E
Approach Delay (s)		18.6			14.0			67.6			67.5	
Approach LOS		B			B			E			E	
Intersection Summary												
HCM 2000 Control Delay				21.6	HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio				0.42								
Actuated Cycle Length (s)				150.0	Sum of lost time (s)				26.6			
Intersection Capacity Utilization				55.9%	ICU Level of Service				B			
Analysis Period (min)				15								
c Critical Lane Group												

Wawa - Digges Road - Manassas, VA
2: Stonewall Road & Sudley Road

No-Build (2023) Conditions

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑	↑	↓	↑	↑
Traffic Volume (vph)	36	694	101	29	870	43	61	43	32	25	27	27
Future Volume (vph)	36	694	101	29	870	43	61	43	32	25	27	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.5	7.5	4.0		6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3472		1770	3514		1681	1753	1583		1819	1583
Flt Permitted	0.24	1.00		0.30	1.00		0.95	0.99	1.00		0.98	1.00
Satd. Flow (perm)	451	3472		555	3514		1681	1753	1583		1819	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	39	746	109	31	935	46	66	46	34	27	29	29
RTOR Reduction (vph)	0	5	0	0	1	0	0	0	0	0	0	27
Lane Group Flow (vph)	39	850	0	31	980	0	55	57	34	0	56	2
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Free	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2			6					Free			4
Actuated Green, G (s)	102.6	97.2		99.8	95.8		11.3	11.3	150.0		10.3	10.3
Effective Green, g (s)	102.6	97.2		99.8	95.8		11.3	11.3	150.0		10.3	10.3
Actuated g/C Ratio	0.68	0.65		0.67	0.64		0.08	0.08	1.00		0.07	0.07
Clearance Time (s)	6.6	6.6		6.6	6.6		7.5	7.5			6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	355	2249		401	2244		126	132	1583		124	108
v/s Ratio Prot	c0.00	0.24		0.00	c0.28		c0.03	0.03			c0.03	
v/s Ratio Perm	0.07			0.05					c0.02			0.00
v/c Ratio	0.11	0.38		0.08	0.44		0.44	0.43	0.02		0.45	0.02
Uniform Delay, d1	8.6	12.3		8.9	13.6		66.3	66.3	0.0		67.1	65.1
Progression Factor	0.89	0.78		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.5		0.1	0.6		2.4	2.3	0.0		2.6	0.1
Delay (s)	7.8	10.0		9.0	14.2		68.7	68.5	0.0		69.7	65.2
Level of Service	A	B		A	B		E	E	A		E	E
Approach Delay (s)		9.9			14.0				52.7		68.2	
Approach LOS		A			B				D		E	

Intersection Summary

HCM 2000 Control Delay	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
Wawa - Digges Road - Manassas, VA

No-Build (2023) Conditions
AM Peak Hour

Intersection: 1: Digges Road & Sudley Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	82	241	315	35	177	184	194	46	55	48	179	68
Average Queue (ft)	20	113	183	9	87	60	77	11	12	19	76	32
95th Queue (ft)	57	229	295	27	155	143	159	34	42	45	145	57
Link Distance (ft)		735	735	735		1184	1184	1184			379	379
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	100					200						
Storage Blk Time (%)	0	3				1	0					
Queuing Penalty (veh)	0	1				2	0					

Intersection: 2: Stonewall Road & Sudley Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	67	241	264	56	268	232	121	168	16	113	52
Average Queue (ft)	20	79	88	13	142	96	12	83	1	46	17
95th Queue (ft)	51	177	199	37	245	204	64	146	17	98	45
Link Distance (ft)	1184	1184	1184	616	616	616		390		445	445
Upstream Blk Time (%)							200		75		
Queuing Penalty (veh)									29		
Storage Bay Dist (ft)										18	
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 5: Digges Road & Champion Court

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 21

Wawa - Digges Road - Manassas, VA
1: Digges Road & Sudley Road

No-Build (2023) Conditions

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑		↑	↑		↑	↑
Traffic Volume (vph)	79	1092	21	38	1132	135	63	16	59	97	1	75
Future Volume (vph)	79	1092	21	38	1132	135	63	16	59	97	1	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7		6.6	6.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1791	1583		1775	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1791	1583		1775	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	1187	23	41	1230	147	68	17	64	105	1	82
RTOR Reduction (vph)	0	0	9	0	0	54	0	0	59	0	0	74
Lane Group Flow (vph)	86	1187	14	41	1230	93	0	85	5	0	106	8
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2			6			3			4
Actuated Green, G (s)	12.6	88.6	88.6	7.9	84.4	84.4		12.6	12.6		14.3	14.3
Effective Green, g (s)	12.6	88.6	88.6	7.9	84.4	84.4		12.6	12.6		14.3	14.3
Actuated g/C Ratio	0.08	0.59	0.59	0.05	0.56	0.56		0.08	0.08		0.10	0.10
Clearance Time (s)	6.6	6.7	6.7	6.6	6.2	6.2		6.7	6.7		6.6	6.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	148	2090	935	93	1991	890		150	132		169	150
v/s Ratio Prot	c0.05	c0.34		0.02	c0.35			c0.05			c0.06	
v/s Ratio Perm			0.01			0.06			0.00			0.00
v/c Ratio	0.58	0.57	0.01	0.44	0.62	0.10		0.57	0.04		0.63	0.05
Uniform Delay, d1	66.2	18.9	12.7	68.9	22.0	15.2		66.1	63.1		65.3	61.7
Progression Factor	1.00	1.00	1.00	1.46	0.50	0.19		1.00	1.00		1.00	1.00
Incremental Delay, d2	5.7	1.1	0.0	2.8	1.2	0.2		4.8	0.1		7.1	0.1
Delay (s)	71.9	20.0	12.7	103.1	12.2	3.1		70.9	63.3		72.4	61.8
Level of Service	E	C	B	F	B	A		E	E		E	E
Approach Delay (s)		23.3			13.9			67.6			67.8	
Approach LOS		C			B			E			E	
Intersection Summary												
HCM 2000 Control Delay				23.9			HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio				0.62								
Actuated Cycle Length (s)				150.0			Sum of lost time (s)			26.6		
Intersection Capacity Utilization				66.2%			ICU Level of Service			C		
Analysis Period (min)				15								
c Critical Lane Group												

Wawa - Digges Road - Manassas, VA
2: Stonewall Road & Sudley Road

No-Build (2023) Conditions

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑	↑		↑	↑
Traffic Volume (vph)	58	1087	103	41	1150	30	101	40	28	80	41	54
Future Volume (vph)	58	1087	103	41	1150	30	101	40	28	80	41	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.5	7.5	4.0		6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	3493		1770	3526		1681	1732	1583		1803	1583
Flt Permitted	0.15	1.00		0.15	1.00		0.95	0.98	1.00		0.97	1.00
Satd. Flow (perm)	277	3493		277	3526		1681	1732	1583		1803	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	62	1156	110	44	1223	32	107	43	30	85	44	57
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	0	0	0	51
Lane Group Flow (vph)	62	1263	0	44	1254	0	74	76	30	0	129	6
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Free	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2			6					Free			4
Actuated Green, G (s)	95.3	89.1		94.3	88.6		12.0	12.0	150.0		16.0	16.0
Effective Green, g (s)	95.3	89.1		94.3	88.6		12.0	12.0	150.0		16.0	16.0
Actuated g/C Ratio	0.64	0.59		0.63	0.59		0.08	0.08	1.00		0.11	0.11
Clearance Time (s)	6.6	6.6		6.6	6.6		7.5	7.5			6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	237	2074		230	2082		134	138	1583		192	168
v/s Ratio Prot	c0.01	c0.36		0.01	0.36		c0.04	0.04			c0.07	
v/s Ratio Perm	0.16			0.11					c0.02			0.00
v/c Ratio	0.26	0.61		0.19	0.60		0.55	0.55	0.02		0.67	0.04
Uniform Delay, d1	13.7	19.4		13.7	19.5		66.4	66.4	0.0		64.5	60.1
Progression Factor	1.37	0.98		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	1.2		0.4	1.3		4.9	4.7	0.0		8.9	0.1
Delay (s)	19.4	20.1		14.1	20.8		71.3	71.1	0.0		73.4	60.2
Level of Service	B	C		B	C		E	E	A		E	E
Approach Delay (s)		20.0			20.6			59.3			69.3	
Approach LOS		C			C			E			E	

Intersection Summary

HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	67.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Queuing and Blocking Report
Wawa - Digges Road - Manassas, VA

No-Build (2023) Conditions
PM Peak Hour

Intersection: 1: Digges Road & Sudley Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	LT	R	LT	R
Maximum Queue (ft)	180	457	558	20	182	415	418	67	123	75	182	56
Average Queue (ft)	72	183	268	3	41	128	150	18	69	32	87	30
95th Queue (ft)	142	368	454	14	110	305	322	50	123	63	154	54
Link Distance (ft)		735	735	735		1184	1184	1184			379	379
Upstream Blk Time (%)					0							
Queuing Penalty (veh)					0							
Storage Bay Dist (ft)	100					200						
Storage Blk Time (%)	7	7					4					
Queuing Penalty (veh)	38	6					1					

Intersection: 2: Stonewall Road & Sudley Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	86	475	502	70	412	368	168	225	116	213	62
Average Queue (ft)	32	217	233	21	227	183	28	109	8	106	27
95th Queue (ft)	68	400	423	52	377	328	118	194	65	184	55
Link Distance (ft)	1184	1184	1184	616	616	616		390		445	445
Upstream Blk Time (%)							200		75		
Queuing Penalty (veh)								0	36		
Storage Bay Dist (ft)								0	28		
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 5: Digges Road & Champion Court

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 73

Wawa - Digges Road - Manassas, VA
1: Digges Road & Sudley Road

Build (2023) Conditions

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑			↑	↑		↑	↑
Traffic Volume (vph)	25	746	70	218	703	80	126	1	30	75	12	84
Future Volume (vph)	25	746	70	218	703	80	126	1	30	75	12	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.7	6.7	6.6	6.2			6.7	6.7		6.6	6.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5007			1775	1583		1786	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.95	1.00		0.96	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5007			1775	1583		1786	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	811	76	237	764	87	137	1	33	82	13	91
RTOR Reduction (vph)	0	0	41	0	6	0	0	0	29	0	0	83
Lane Group Flow (vph)	27	811	35	237	845	0	0	138	4	0	95	8
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2						3			4
Actuated Green, G (s)	5.5	69.0	69.0	24.2	88.2			16.9	16.9		13.3	13.3
Effective Green, g (s)	5.5	69.0	69.0	24.2	88.2			16.9	16.9		13.3	13.3
Actuated g/C Ratio	0.04	0.46	0.46	0.16	0.59			0.11	0.11		0.09	0.09
Clearance Time (s)	6.6	6.7	6.7	6.6	6.2			6.7	6.7		6.6	6.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	64	1627	728	285	2944			199	178		158	140
v/s Ratio Prot	0.02	c0.23		c0.13	0.17			c0.08			c0.05	
v/s Ratio Perm			0.02						0.00			0.01
v/c Ratio	0.42	0.50	0.05	0.83	0.29			0.69	0.02		0.60	0.06
Uniform Delay, d1	70.7	28.4	22.4	60.9	15.3			64.1	59.2		65.8	62.6
Progression Factor	1.00	1.00	1.00	0.85	0.51			1.00	1.00		1.00	1.00
Incremental Delay, d2	4.4	1.1	0.1	17.8	0.2			10.0	0.0		6.3	0.2
Delay (s)	75.1	29.5	22.5	69.8	8.1			74.1	59.2		72.1	62.8
Level of Service	E	C	C	E	A			E	E		E	E
Approach Delay (s)		30.2			21.5			71.2			67.5	
Approach LOS		C			C			E			E	
Intersection Summary												
HCM 2000 Control Delay				32.1		HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio				0.60								
Actuated Cycle Length (s)				150.0		Sum of lost time (s)			26.6			
Intersection Capacity Utilization				63.1%		ICU Level of Service			B			
Analysis Period (min)				15								
c Critical Lane Group												

Wawa - Digges Road - Manassas, VA
2: Stonewall Road & Sudley Road

Build (2023) Conditions

Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑	↑		↑	↑
Traffic Volume (vph)	36	734	105	29	909	43	65	43	32	25	27	27
Future Volume (vph)	36	734	105	29	909	43	65	43	32	25	27	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.5	7.5	4.0		6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.98		1.00	0.99		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00		0.98	1.00
Satd. Flow (prot)	1770	3473		1770	3515		1681	1750	1583		1819	1583
Flt Permitted	0.23	1.00		0.28	1.00		0.95	0.99	1.00		0.98	1.00
Satd. Flow (perm)	425	3473		521	3515		1681	1750	1583		1819	1583
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	39	789	113	31	977	46	70	46	34	27	29	29
RTOR Reduction (vph)	0	5	0	0	1	0	0	0	0	0	0	27
Lane Group Flow (vph)	39	897	0	31	1022	0	57	59	34	0	56	2
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Free	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2			6					Free			4
Actuated Green, G (s)	102.5	97.1		99.7	95.7		11.4	11.4	150.0		10.3	10.3
Effective Green, g (s)	102.5	97.1		99.7	95.7		11.4	11.4	150.0		10.3	10.3
Actuated g/C Ratio	0.68	0.65		0.66	0.64		0.08	0.08	1.00		0.07	0.07
Clearance Time (s)	6.6	6.6		6.6	6.6		7.5	7.5			6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	338	2248		379	2242		127	133	1583		124	108
v/s Ratio Prot	c0.00	0.26		0.00	c0.29		c0.03	0.03			c0.03	
v/s Ratio Perm	0.07			0.05					c0.02			0.00
v/c Ratio	0.12	0.40		0.08	0.46		0.45	0.44	0.02		0.45	0.02
Uniform Delay, d1	8.9	12.6		9.0	13.9		66.3	66.3	0.0		67.1	65.1
Progression Factor	2.78	2.51		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.5		0.1	0.7		2.5	2.4	0.0		2.6	0.1
Delay (s)	24.7	32.0		9.1	14.5		68.8	68.6	0.0		69.7	65.2
Level of Service	C	C		A	B		E	E	A		E	E
Approach Delay (s)		31.7			14.4				53.1		68.2	
Approach LOS		C			B				D		E	

Intersection Summary

HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Wawa - Digges Road - Manassas, VA
3: RIRO Driveway & Sudley Road

Build (2023) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↑↑	↑↑	↗	
Traffic Vol, veh/h	768	83	0	1001	0	107
Future Vol, veh/h	768	83	0	1001	0	107
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	835	90	0	1088	0	116

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	0	-	418
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.92
Pot Cap-1 Maneuver	-	0	-	499
Stage 1	-	0	-	0
Stage 2	-	0	-	0
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	499
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	499	-	-	-
HCM Lane V/C Ratio	0.233	-	-	-
HCM Control Delay (s)	14.4	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0.9	-	-	-

Wawa - Digges Road - Manassas, VA
4: Champion Court & Full-movement Driveway

Build (2023) Conditions
Timing Plan: AM Peak Hour

Intersection

Int Delay, s/veh 8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	141	1	1	1	1	118
Future Vol, veh/h	141	1	1	1	1	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	153	1	1	1	1	128

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	309	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	307	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	683	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	746	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	618	1082
Mov Cap-2 Maneuver	-	-	-	-	618	-
Stage 1	-	-	-	-	924	-
Stage 2	-	-	-	-	746	-

Approach	EB	WB	SB
HCM Control Delay, s	7.4	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1075
HCM Lane V/C Ratio	0.095	-	-	-	0.12
HCM Control Delay (s)	7.5	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.4

Queuing and Blocking Report
Wawa - Digges Road - Manassas, VA

Build (2023) Conditions
AM Peak Hour

Intersection: 1: Digges Road & Sudley Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	92	369	464	56	251	307	244	175	130	68	169	73
Average Queue (ft)	25	176	257	18	171	128	98	65	95	20	78	31
95th Queue (ft)	65	327	405	44	259	290	211	145	144	50	144	56
Link Distance (ft)		735	735	735		255	255	255			379	379
Upstream Blk Time (%)					2	2	0					
Queuing Penalty (veh)					0	7	0					
Storage Bay Dist (ft)	100				200							
Storage Blk Time (%)	0	7			10	5						
Queuing Penalty (veh)	1	2			24	10						

Intersection: 2: Stonewall Road & Sudley Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	59	280	303	48	271	234	140	108	176	87	140	62
Average Queue (ft)	21	87	104	11	144	75	33	18	85	4	53	20
95th Queue (ft)	50	222	246	35	251	184	93	66	156	45	110	49
Link Distance (ft)	872	872	872	616	616	616	616		390		444	444
Upstream Blk Time (%)								200		75		
Queuing Penalty (veh)									27			
Storage Bay Dist (ft)										17		
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 3: RIRO Driveway & Sudley Road

Movement	WB	WB	NB
Directions Served	T	T	R
Maximum Queue (ft)	28	6	81
Average Queue (ft)	2	0	37
95th Queue (ft)	20	6	66
Link Distance (ft)	872	872	130
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
Wawa - Digges Road - Manassas, VA

Build (2023) Conditions
AM Peak Hour

Intersection: 4: Champion Court & Full-movement Driveway

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	14	73
Average Queue (ft)	0	39
95th Queue (ft)	4	63
Link Distance (ft)		131
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Digges Road & Champion Court

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 62

Wawa - Digges Road - Manassas, VA
1: Digges Road & Sudley Road

Build (2023) Conditions

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑↑			↑	↑		↑	↑
Traffic Volume (vph)	79	1107	36	130	1072	135	153	16	59	97	1	75
Future Volume (vph)	79	1107	36	130	1072	135	153	16	59	97	1	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.7	6.7	6.6	6.2			6.7	6.7		6.6	6.6
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5000			1782	1583		1775	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00			0.96	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5000			1782	1583		1775	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	1203	39	141	1165	147	166	17	64	105	1	82
RTOR Reduction (vph)	0	0	20	0	9	0	0	0	55	0	0	74
Lane Group Flow (vph)	86	1203	19	141	1303	0	0	183	9	0	106	8
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA	Perm	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases			2						3			4
Actuated Green, G (s)	12.4	72.3	72.3	16.7	77.1			20.1	20.1		14.3	14.3
Effective Green, g (s)	12.4	72.3	72.3	16.7	77.1			20.1	20.1		14.3	14.3
Actuated g/C Ratio	0.08	0.48	0.48	0.11	0.51			0.13	0.13		0.10	0.10
Clearance Time (s)	6.6	6.7	6.7	6.6	6.2			6.7	6.7		6.6	6.6
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	146	1705	763	197	2570			238	212		169	150
v/s Ratio Prot	0.05	c0.34		c0.08	c0.26			c0.10			c0.06	
v/s Ratio Perm			0.01						0.01			0.00
v/c Ratio	0.59	0.71	0.02	0.72	0.51			0.77	0.04		0.63	0.05
Uniform Delay, d1	66.3	30.5	20.4	64.4	24.0			62.7	56.6		65.3	61.7
Progression Factor	1.00	1.00	1.00	1.15	0.57			1.00	1.00		1.00	1.00
Incremental Delay, d2	6.0	2.5	0.1	9.9	0.6			13.9	0.1		7.1	0.1
Delay (s)	72.3	33.0	20.4	83.9	14.2			76.6	56.6		72.4	61.8
Level of Service	E	C	C	F	B			E	E		E	E
Approach Delay (s)		35.2			21.0			71.4			67.8	
Approach LOS		D			C			E			E	

Intersection Summary

HCM 2000 Control Delay	33.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	26.6
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Wawa - Digges Road - Manassas, VA
2: Stonewall Road & Sudley Road

Build (2023) Conditions

Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↓		↑	↑↓		↑	↑	↑		↑	↑
Traffic Volume (vph)	58	1117	106	41	1179	30	104	40	28	80	41	54
Future Volume (vph)	58	1117	106	41	1179	30	104	40	28	80	41	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.6	6.6		6.6	6.6		7.5	7.5	4.0		6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		0.95	0.95	1.00		1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98	1.00		0.97	1.00
Satd. Flow (prot)	1770	3493		1770	3526		1681	1730	1583		1803	1583
Flt Permitted	0.14	1.00		0.14	1.00		0.95	0.98	1.00		0.97	1.00
Satd. Flow (perm)	261	3493		259	3526		1681	1730	1583		1803	1583
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	62	1188	113	44	1254	32	111	43	30	85	44	57
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	0	0	0	51
Lane Group Flow (vph)	62	1298	0	44	1285	0	75	79	30	0	129	6
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA	Free	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases	2			6					Free			4
Actuated Green, G (s)	95.1	88.9		94.1	88.4		12.2	12.2	150.0		16.0	16.0
Effective Green, g (s)	95.1	88.9		94.1	88.4		12.2	12.2	150.0		16.0	16.0
Actuated g/C Ratio	0.63	0.59		0.63	0.59		0.08	0.08	1.00		0.11	0.11
Clearance Time (s)	6.6	6.6		6.6	6.6		7.5	7.5			6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)	227	2070		219	2077		136	140	1583		192	168
v/s Ratio Prot	c0.01	c0.37		0.01	0.36		0.04	c0.05			c0.07	
v/s Ratio Perm	0.16			0.12					c0.02			0.00
v/c Ratio	0.27	0.63		0.20	0.62		0.55	0.56	0.02		0.67	0.04
Uniform Delay, d1	14.2	19.8		14.2	19.9		66.3	66.3	0.0		64.5	60.1
Progression Factor	2.22	1.76		1.00	1.00		1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.5	1.1		0.5	1.4		4.8	5.1	0.0		8.9	0.1
Delay (s)	32.1	36.0		14.6	21.3		71.0	71.5	0.0		73.4	60.2
Level of Service	C	D		B	C		E	E	A		E	E
Approach Delay (s)		35.8			21.1			59.6			69.3	
Approach LOS		D			C			E			E	

Intersection Summary

HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	27.2
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Wawa - Digges Road - Manassas, VA
3: RIRO Driveway & Sudley Road

Build (2023) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↗	↑↑	↑↑	↗	
Traffic Vol, veh/h	1187	76	0	1337	0	94
Future Vol, veh/h	1187	76	0	1337	0	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	200	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1290	83	0	1453	0	102

Major/Minor	Major1	Major2	Minor1	
Conflicting Flow All	0	0	-	645
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	-	-	-	7.14
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	-	3.92
Pot Cap-1 Maneuver	-	0	-	356
Stage 1	-	0	-	0
Stage 2	-	0	-	0
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	356
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	356	-	-	-
HCM Lane V/C Ratio	0.287	-	-	-
HCM Control Delay (s)	19.1	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.2	-	-	-

Wawa - Digges Road - Manassas, VA
4: Champion Court & Full-movement Driveway

Build (2023) Conditions
Timing Plan: PM Peak Hour

Intersection

Int Delay, s/veh 7.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	107	1	1	1	1	90
Future Vol, veh/h	107	1	1	1	1	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	1	1	1	1	98

Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	2	0	-	0	235	2
Stage 1	-	-	-	-	2	-
Stage 2	-	-	-	-	233	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1620	-	-	-	753	1082
Stage 1	-	-	-	-	1021	-
Stage 2	-	-	-	-	806	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	1620	-	-	-	699	1082
Mov Cap-2 Maneuver	-	-	-	-	699	-
Stage 1	-	-	-	-	947	-
Stage 2	-	-	-	-	806	-

Approach	EB	WB	SB
HCM Control Delay, s	7.3	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1620	-	-	-	1076
HCM Lane V/C Ratio	0.072	-	-	-	0.092
HCM Control Delay (s)	7.4	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Build (2023) Conditions
Queuing and Blocking Report

Wawa - Digges Road - Manassas, VA

PM Peak Hour

Intersection: 1: Digges Road & Sudley Road

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	TR	LT	R	LT	R
Maximum Queue (ft)	199	652	731	318	234	268	277	268	142	60	184	72
Average Queue (ft)	85	335	427	33	116	155	170	168	110	26	87	32
95th Queue (ft)	175	582	687	254	199	303	310	297	148	53	157	60
Link Distance (ft)		735	735	735		247	247	247			379	379
Upstream Blk Time (%)		1	2	0	0	3	3	3				
Queuing Penalty (veh)		0	0	0	0	11	15	13				
Storage Bay Dist (ft)	100				200							
Storage Blk Time (%)	6	15			1	6						
Queuing Penalty (veh)	34	12			3	8						

Intersection: 2: Stonewall Road & Sudley Road

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	106	518	529	67	502	436	175	223	139	212	66
Average Queue (ft)	37	303	328	22	247	204	32	111	7	104	29
95th Queue (ft)	80	510	535	54	408	366	120	190	66	184	57
Link Distance (ft)	881	881	881	616	616	616		390		445	445
Upstream Blk Time (%)					0						
Queuing Penalty (veh)					0						
Storage Bay Dist (ft)						200			75		
Storage Blk Time (%)							0	37			
Queuing Penalty (veh)							0	29			

Intersection: 3: RIRO Driveway & Sudley Road

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	T	T	T	T	R
Maximum Queue (ft)	5	13	141	143	128	99
Average Queue (ft)	0	0	17	17	14	38
95th Queue (ft)	5	8	81	82	71	75
Link Distance (ft)	247	247	881	881	881	120
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Build (2023) Conditions
Queuing and Blocking Report

Wawa - Digges Road - Manassas, VA
PM Peak Hour

Intersection: 4: Champion Court & Full-movement Driveway

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	6	68
Average Queue (ft)	0	34
95th Queue (ft)	3	56
Link Distance (ft)		110
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Digges Road & Champion Court

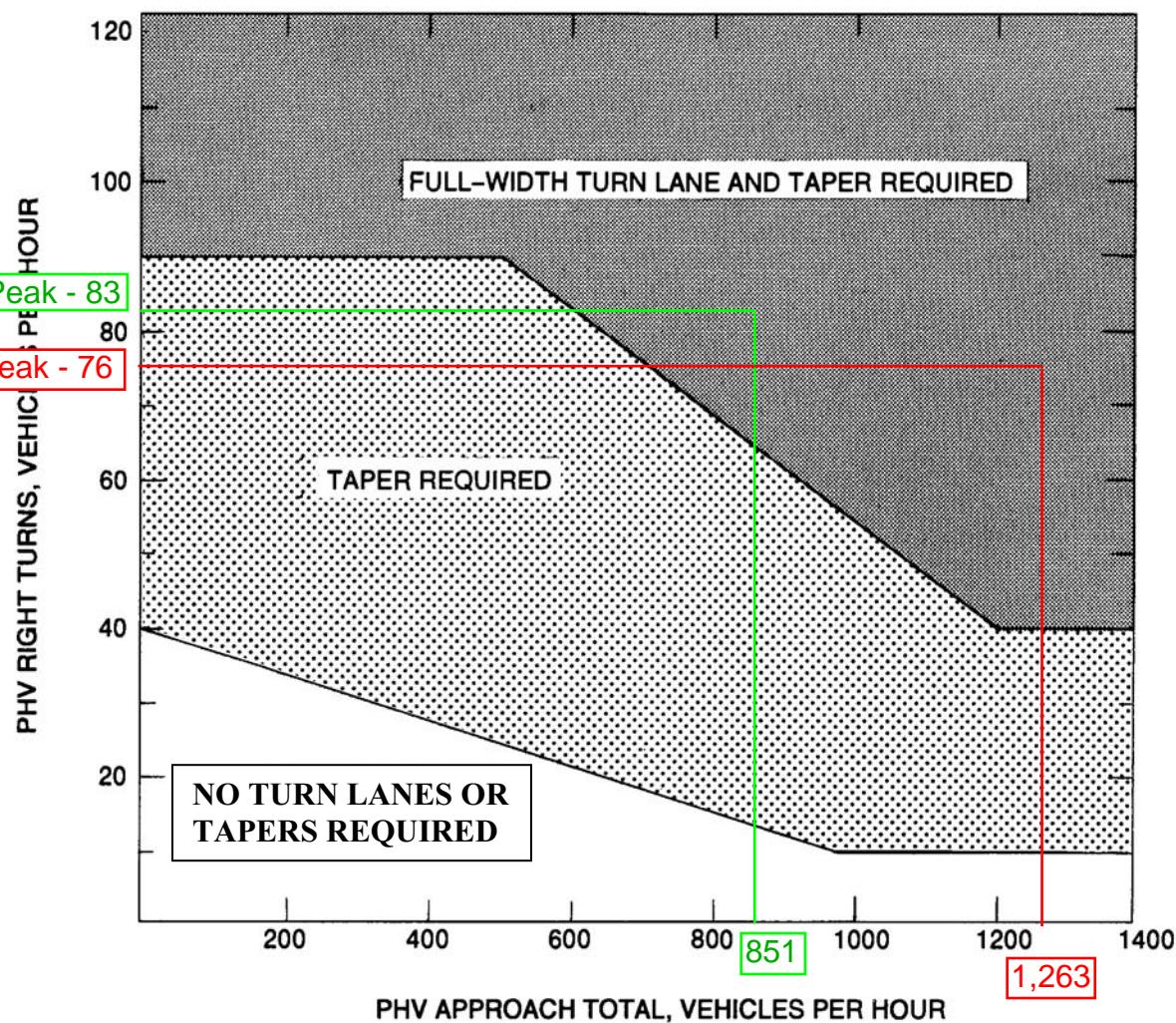
Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 125

**Sudley Road at RIRO Site Driveway
Eastbound Right-turn Lane Warrant
Build (2023) Volumes**

F-97



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

LEGEND

PHV- - Peak Hour Volume (also Design Hourly Volume equivalent)

Adjustment for Right Turns

If PHV is not known use formula: $\text{PHV} = \text{ADT} \times K \times D$

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

When right turn facilities are warranted, see Figure 3-1 for design criteria.*

FIGURE 3-27 WARRANTS FOR RIGHT TURN TREATMENT (4-LANE HIGHWAY)

* Rev. 1/15